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Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 57. No. 6.
WHOLE No. 939.

RICHMOND, VA., SEPTEMBER, 1930

20 CENTS A COPY
$2.00 A YEAR

TARDY SYMPTOMS OF CONGENITAL LESIONS.*

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INTRODUCTION.—In the diagnostic study of a patient one is naturally influenced by certain factors inherent to the individual. The age and the sex of the patient cannot help but direct our thoughts in some directions and away from others. A most obvious example with regard to sex concerns the wide differences in our diagnostic reaction to a complaint of lower abdominal pain in the male and in the female. Similarly, the suspicion aroused in us by many symptoms differs widely according to the age group in which our patient belongs. This attitude of mind is reflected in such phrases as the "cancer age" or the "degenerative period of life."

In a patient of more than fifty years of age, we are quick to think of a degenerative process; in youth the acute infections come first to mind. With the same reasoning we tend to associate the thought of a congenital lesion with infancy or youth. This is quite proper since many congenital lesions are evident at or soon after birth and continue to produce symptoms until the lesion is cured or the patient succumbs. These need no discussion here. All congenital lesions are intensely interesting from many points of view, but there is one aspect of congenital lesions which is especially important from the point of view of diagnosis. This is the well-known but often forgotten fact that many congenital faults fail to make themselves evident in infancy and fail to produce symptoms for varying periods, in some instances never, in others not until the individual has reached adult years. As examples of the many congenital anomalies which are apt never to produce symptoms one may cite accessory spleens, *situs inversus* and many of the anomalies of arteries. Of those whose first symptoms may appear after years of silence, many, I am sure, come at once to your minds. A few of these will be discussed more fully.

Before doing so, however, let us stop to speculate concerning the factors which, as life advances and the organism ages, become operative to transmute a silent congenital abnormality into one causing disease and even threatening life.

We must leave out of our discussion, because of our ignorance, all attempt to deal with such intangibles as an hereditary weakness, for example, shoddiness of arteries as Osler put it. Such inborn tendencies or weaknesses, it is true, often become evident only after the wear and tear of many years of life but the topic is too complex for us today. We cannot recognize the primary fault nor evaluate the factors bringing about the later failure.

The factors which act in the cases of more definite congenital lesions can more often be recognized. In one the abnormal part proves to be a *locus minoris resistentiae* and becomes a starting point for an infectious or neoplastic process. In other instances, the abnormality induces a narrowing of the margin of functional safety which results in premature failure of this function under the gradual impairment by the passing years. In still other instances, the postural changes and the weakening muscles of middle life turn a previous silent anomaly into a symptom-producing lesion.

Let us consider a few congenital lesions in detail and let us try to recognize which of these various factors act in each.

1. CHRONIC DUODENAL ILEUS.—In 15 to 20 per cent of newborn infants there will be found, if one searches carefully in the neighborhood of the duodenum, one or more thickenings of the peritoneum. These are due to abnormal peritoneal fusion during fetal life; they may occur in any of several positions, often in more than one. Various terms and personal names have been applied to them ac-

*Read before the Richmond Academy of Medicine, April 22, 1930.

cording to the position of the band, or its chief describer. Thus, for example, the bands are described as being supramesocolic and submesocolic, as being hepatoduodenal and duodeno-jejunal, and the names of Harris, Kirk, Jackson, Mayo, Kellogg, for examples, are attached to various forms. Perhaps for our purpose today it will suffice to quote the apt phrase first used by Morris, "There are cobwebs in the attic of the abdomen."

It is interesting how few of these congenital bands ever cause symptoms, but when they do the symptom picture may be very remarkable. Two groups of phenomena arise; one is chiefly mechanical, the other toxic. Chronic obstruction in the lower portion of the duodenum soon leads to dilatation of the duodenum, then to regurgitation into the stomach and in time to gastric retention and dilatation with vomiting. Among the toxic symptoms recognized are anorexia, headache, fatigability, mental depression and the general picture of profound neurasthenia. It is under some such diagnosis as neurasthenia that many of these patients, if not correctly diagnosed, drag out a truly miserable existence.

Such cases may be very difficult to diagnose, especially when the apparently neurasthenic picture dominates. The past history may in some cases be helpful in that one may be able to trace certain digestive symptoms back into childhood. Usually, however, this is not possible and the disease picture seems to have appeared primarily in adult life. Certainly it is in adults that the condition makes itself felt. In Duval's[1] book on the duodenum, which is the best review of this subject, the author's youngest patient was twenty-four years of age. In the series recently reported by Dr. Katherine S. Andrews[2] from the Hospital of the University of Pennsylvania, the patients were all in early adult or middle life.

It is easy to picture how a veil or band hithereto not causing sufficient interference with bowel lumen to produce symptoms may become troublesome. Vanderhoof[3] has stressed the importance of visceroptosis. Wilkie[4] also considers visceroptosis as an important factor in producing a drag on the mesentery and emphasizes the action of a congenital lack of fixation of the proximal colon. The influence of repeated pregnancies acting by relaxing the abdominal wall and thus favoring visceral ptosis is easily visualized. Any illness or loss of weight may similarly weaken the abdominal wall sufficiently to permit an increased drag of the duodenum on its anchoring adhesion with resulting obstruction. Constipation even may be the determining factor. Finally, the mere inevitable weakening of the abdominal walls which comes with middle age may prove sufficient. Lumbar lordosis favors the obstruction.

Sometimes one may be able to recognize that the immediate cause of the appearance of symptoms has been straining in childbirth or lifting heavy weights, but often no such relationship is evident, and if one is not alert he will fail to appreciate the manner in which changes incident to middle age are adequate to cause a silent congenital anomaly to become an active cause of illness. Such failure will readily lead to the overlooking of the possibility that a congenital lesion is at the bottom of any disorder first appearing in adult life.

It is further interesting to realize that any illness, if sufficiently serious or prolonged, may prove to be the straw which breaks the back of duodenal function. There is no doubt that in many such instances the digestive and neurasthenic symptoms have been considered a feature of the obvious disease whatever it happened to be, while the kinked duodenum, the true criminal, escaped detection. In this connection, certain instances of severe digestive disturbance attributed to incipient tuberculosis come to mind. Is it possible that in some the digestive symptoms resulted from duodenal obstruction due to a congenital band which had produced no symptoms until loss of weight from the tuberculosis resulted in greater obstruction? Once symptoms have appeared the progressive vicious circle is easily appreciated.

2. Congenital Cardiac Defects.—Anomalies of the heart offer themselves as excellent examples of the point we are discussing. Different cases run the gamut all the way from the marked picture of morbus caeruleus to that of almost complete lack of symptoms. The typical symptom complex of morbus caeruleus includes the conspicuous deep cyanosis, more or less clubbing of the fingers and toes, dyspnoea both paroxysmal and upon exertion, and

1. **The Duodenum: Medical, Radiologic and Surgical Studies.** St. Louis: C. V. Mosby Company, 1928.
2. **Medical Clinics of North America,** 1930, 13, 1027.
3. **J. Am. Med. Assn.,** 1917, 69, 510.
3. **J. Am. Med. Assn.,** 1917, 69, 510.
4. **Brit. J. Surg.,** 1921, 9, 204.

finally polycythemia. Death often occurs within a few weeks or months after birth; less severe cases may survive for years.

In sharp contrast are those individuals who with a cardiac anomaly exhibit few, if any, symptoms of the lesion. The presence of the anomaly can be recognized only from the auscultatory findings. They may live for many years apparently unhandicapped by the cardiac defect. They live, however, under the threat of certain dangers. One is that of infection of the congenitally abnormal part. Just as the valve leaflet, damaged by rheumatic fever, is liable to become the seat of infection with the streptococcus viridans, so is the congenitally anomalous area liable to this infection. This is a perfect example of how a congenital lesion is a *locus minoris resistentiae* to infection and incidentally a bacterial endocarditis on a congenital lesion is another illustration of tardy disease from a truly congenital origin.

The other danger incident to an anomalous heart arises from the serious symptomatic disturbance which may result from even moderate degrees of embarrassment of the pulmonary circulation or myocardial weakening in the presence of a congenital cardiac defect.

A fundamental difference between many of the cyanosed and the non-cyanosed cases of congenital heart disease is the direction of flow through an abnormal communication such as a patent ductus arteriosus or a patent foramen ovale. In the non-cyanosed the flow or shunt is from the arterial to the venous side, an arterial-venous shunt. In the cyanosed on the other hand, it is a venous-arterial shunt. Many instances of cardiac anomaly inevitably fall in this latter class and form the group to which the old term "Morbus caeruleus" is applicable.

In addition to these two extremes there is another group of cases which for many years may present an arterial venous shunt with few or no symptoms but which may under varying conditions display a reversal of the shunt and a development of cyanosis and dyspnoea.

It was Bard and Curtillet[5] who in 1889 first clearly described this adult manifestation of a congenital lesion under the now universally accepted term "Cyanose tardive." Maude Abbott and Dawson[6] have been the chief writers on this topic of recent years.

The lesions which lend themselves most often to years of life without symptoms followed by terminal or transient reversal of flow are the following: patent ductus arteriosus, localized defects of aortic septum, of interauricular septum or interventricular septum.

The literature contains most striking case reports illustrating this late cyanosis. For example, Abbott and Kaufmann[7] report a case in which the first onset of cyanosis was at the age of sixty-four years and only six months before death. Nor is the congenital defect in all such cases a minor one; at times a widely open foramen ovale may be found. The determining factor is the direction of flow and this in turn depends upon the difference in pressure on the arterial and the venous sides. A leakage of oxygenated blood into the venous side *per se* results in no symptoms and it is only when such a shunt is reversed that cyanosis appears. Reversal of flow follows the establishment of a disproportion in pressures with the higher on the pulmonic or venous side. This pressure relation may develop insidiously as a result of slowly acting factors incident to gradual myocardial weakening or emphysema, or more abruptly under physical exertion or illness. Just as soon as a sufficient amount of unoxygenated hemoglobin is present in the arterial blood, cyanosis appears. The threshold for cyanosis is reached at about 6.5 volumes per cent unsaturation and this figure is readily reached following a reversal of flow through an anomalous communication between the arterial and venous sides of the heart. It has been estimated that, with other factors normal, about 38 per cent of the venous blood must be shunted to the arterial side to bring about cyanosis.

When an adult, previously never cyanosed and in whom no congenital heart lesion had been recognized, suddenly becomes deeply cyanosed and dyspnoeic, we must not forget the possibility that a hitherto unrecognized congenital cardiac defect is present. We are too little inclined to remember such silent congenital lesions and two quick to turn to some such rarity as an arteriovenus aneurysm which from one point of view seems a more appro-

5. **Rev. de Med.**, 1889, p. 993.

6. **International Clinics**, 1924, 4, 156.
7. **J. Path. and Bact.**, 1910, 14, 525.

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priate diagnosis in an adult or elderly patient. The readiness with which one may make this mistake was brought home to me very clearly only recently by my own blindness to the true state of affairs in an adult patient with paroxysmal cyanosis of recent development. On subsequent careful questioning a story of similar attacks could be traced far back into childhood.

3. Cervical Ribs.—In support of our thesis from a different angle let us consider the late symptoms arising from cervical ribs.

This congenital anomaly is by no means a rare one; in fact it was noted at the Mayo Clinic[8] in one patient of every 2,000 examined. It may at times cause most serious and disabling symptoms, but it does this infrequently and often not until adult years. The commonest period for the onset of symptoms from a cervical rib is variably stated by different writers but it is probably between twenty and forty. Many cases fall outside these limits, some being as young as twelve, others over sixty.

An enormous literature concerning cervical ribs is available; historically it goes far back into the past. Riesman's[9] excellent review in 1904 of the history has apparently supplied many subsequent writers with their material for this phase of the subject. Streissler,[10] in 1913, published an extensive monograph which covers every aspect of the subject. More recently, Adson and Coffey[11] have reviewed the Mayo Clinic material and advanced newer explanations for the production of symptoms and surgical technique for their relief.

Cervical ribs occur in various degrees of completeness, they are of familial occurrence, are thought by some to be a stigma of degeneracy and are often associated with other abnormalities. In 60 to 80 per cent of cases they are bilateral but bilateral symptoms occur in only a third of these cases. Unilateral cervical rib is more often on the left side but symptoms occur oftenest on the right. Adson's view is that the anatomical basis for circulatory symptoms is the compression of the subclavian artery by the scalenus anticus muscle. This is favored by the presence of a cervical rib and it is worthy of note that it is the shorter and therefore straighter cervical rib which is most likely to produce a narrow angle between the muscle and the rib and thus cause compression. Such short ribs are less easily recognized on palpation.

In over half of the patients with cervical rib no symptoms occur; in the others they may be mild or severe. The most important symptoms are pain down the arm and in the hand, muscular atrophy, anaesthesia, and circulatory disturbances in the hand. These circulatory symptoms may be due more to thrombosis of the artery from repeated minor traumata than from actual occlusion from pressure.

Every writer on cervical rib has been intrigued by the late appearance of symptoms and has speculated concerning the factors which finally cause the onset of symptoms. Speissler enumerates the more important as follows: (1) Growth, and at puberty the ossification of the ribs, while at a later age the calcification of the cartilages. (2) Trauma to the artery or plexus as a result of movements of arm or thorax, or the carrying of weights on the shoulder. A cervical rib has been held to disqualify a man from service in certain armies. (3) Loss of weight with ensuing change in the thoracic aperture, or a similar change as a result of fibrotic contraction of an apical tuberculosis or pleurisy. He quotes others of less importance.

Adson emphasizes childbirth, rapid loss of weight, chronic nervous exhaustion and ptosis. The mechanism is clear by which these various factors act. It is a matter of mechanics in each instance; with sufficient influence on the relations of the muscles and rib to the nerves or artery to bring about pressure phenomena on one or other of the latter. In the presence of a cervical rib there is evidently a very much narrowed margin of safety in this zone, which is readily lost as a result of any one of many factors.

In none of the articles which I have read is there any mention of the possibility of emphysema being the determining factor in changing a non-symptomatic case into a symptomatic one. It would seem that in certain cases the alteration in the shape of the thoracic cage which accompanies the progress of emphysema would be sufficient to induce pressure on the artery or nerves. Furthermore, with emphysema there is often chronic bronchitis and severe cough which would supply

8. Adson, A. W.: **Atlantic Med. J.**, 1928, 31, 222.
9. **Univ. of Penna. Med. Bull.**, 1904-05, 17, 2.
10. **Ergeb. d. Chirurgie u. Orthopaedie**, 1913, 5, 380.
11. **Ann. Surg.**, 1927, 85, 839.

the repeated minor traumata needed to harm the vessel.

There is a striking similarity of this list of causes with that of the factors acting in the case of congenital periduodenal bands. Again the possibility is obvious of overlooking a congenital lesion as the explanation of a certain symptom appearing for the first time in adult life and perhaps coincidently with the occurrence of a disease which might perhaps be adequate to explain most of the symptom complex. In a patient with obscure arm pain, for example, one must be alert to recognize any factor in the recent history which might have led a previously silent cervical rib to cause pressure. For example, a patient recently reported by Oljenick[12] had bilateral cervical ribs but symptoms only on the left. This unusual distribution found its probable explanation in her occupation as a telephone switchboard operator who used the left arm as much as the right.

By recognizing such causative factors we will be the quicker to think of cervical rib in the presence of such symptoms in the arm or hand as pain, atrophy, anaesthesia, and circulatory disturbances. Undoubtedly, many cases due to cervical rib are misdiagnosed neuritis, Raynaud's disease or syringomyelia.

This mistake is the more unfortunate since treatment of the cervical rib is usually effective. Adson advises simple division of the scalenus anticus without removal of the accessory rib. This has proved sufficient in his cases. Any treatment may fail of complete success if the artery has become sufficiently thrombosed.

4. Anomalies of the Kidney.—Some years ago Dr. Baldwin Lucke and I[13] reported a case which beautifully illustrates another aspect of this thesis. The patient was a fourteen year old girl who presented the clinical picture of chronic glomerular nephritis with uremia. All the usual evidences, both symptomatic and chemical, were present. Professor Stengel in ward rounds pointed out that this fourteen year old girl presented a disease picture far more common in adults, and that in attempting to explain this the only etiologic factor discoverable was a scarlet fever at the age of seven. This attack had been severe but no story of kidney involvement could be elicited. Professor Stengel was so impressed by the inadequacy of this scarlatina as an explanaton for the early appearance of chronic glomerular nephritis, that he urged us to look for additional factors and suggested that the needed explanation might be found in a congenital abnormality of the kidney. At necropsy, a most careful search revealed the presence of but a single kidney which itself was much deformed and weighed only 65 grams. This is in contrast to the usual finding of hypertrophy of the kidney when there is but one present. The small size of the kidney in this case may have been wholly due to nephritis; but it is unlikely that the organ was ever above normal in size. The obvious conclusion was drawn that the terminal picture of glomerulonephritis with uremia had appeared earlier because of the markedly narrowed margin of functional safety which resided in the single and deformed kidney.

Perhaps another congenital renal anomaly offers even a better example. This is the so-called "congenital polycystic kidney." Both kidneys are usually involved by the multiple cysts which almost wholly destroy the renal architecture and leave only thin septa of kidney tissue between the cysts.

These cysts are believed to be of embryonal origin and in some instances the kidneys are so greatly enlarged as to interfere with the birth of the child. In other instances death occurs in childhood but still other individuals with such kidneys may live to advanced years. In fact, it is commonly said that such cystic kidneys are rarely discovered before the age of fifty. When one examines the kidneys from such a patient one is amazed that renal function could have been maintained as long as it was with what appears to be a greatly reduced amount of functioning kidney tissue.

A case at our University Hospital a few years ago is a very spectacular example of this. The patient, a man of over fifty was admitted with characteristic symptoms of acute cholecystitis. By abdominal palpation a large mass could be felt in each kidney region. A suspicion of polycystic kidneys arose but the urine was normal and the kidney function satisfactory. After a few days of fever, however, the picture suddenly changed, the patient developed acute uremia and death followed in a very few days. At necropsy, it was found

12. Arch. Surg., 1929, 18, 1084.
13. Arch. Int. Med., 1921, 27, 661.

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that there was an acute calculous cholecystitis and that both kidneys were apparently composed wholly of multiple cysts. It was scarcely possible to find any kidney tissue containing glomeruli or tubules.

Kidney function had been just sufficient to meet the ordinary demands of life but when the cholecystitis developed the hitherto silent congenitally anomalous kidneys lost their little margin of safety and fatal uremia developed. This case is not unique but exemplifies well this form of tardy symptoms from congenital lesions.

The usual clinical signs of this condition are (1) the bilateral renal tumors, (2) intermittent hematuria, (3) eventually the picture of chronic glomerular nephritis usually terminating in a fatal uremia. Diagnostically one must not forget the possibility of the presence of this congenital lesion in the case of an adult with any part of the above picture nor in instances of early or seemingly atypical chronic glomerular nephritis.

Discussion.—There are many other examples which one is tempted to include but they would add little to the points already made. It would be worth while, if time permitted, to choose for discussion some striking instances of the well recognized tendency of a congenitally abnormal tissue to undergo carcinomatous change in later life or to become the seat of an infection. Supernumerary breasts or undescended testicles would be examples of this greater susceptibility to magligant tumor; Meckel's diverticulum or congenital cardiac anomalies are examples of lesions on which subsequent infection is likely to lodge. Meckel's diverticulum, due to the failure of closure of the omphalomesenteric duct, is also a not uncommon cause in adult life of intestinal obstruction.

Anomalies of the uterus render that organ more liable to malignant tumors but far more interesting for our thesis are the difficulties which may arise from an anomalous uterus during pregnancy. In this example, we find a silent congenital lesion causing symptoms and dangerous ones, for the first time in adult life as a result of the demands made upon the organ by what should be for it a physiologic process.

These few examples must be trusted to illustrate the subject. They would seem to be adequate to prove the point that many congenital lesions do not cause symptoms or at most very trifling ones, until the patient has reached an age at which we are tempted to overlook the possibility of a congenital lesion.

In every instance it would appear that the development of symptoms was the result of the entrance into the situation of some additional factor. The silent congenital lesion alone would have continued silent; the added factor would not have caused other than its usual symptoms without the preexisting anomaly. A normal adult passes through a debilitating disease, loses much weight but without secondary disturbances. The same event in an individual with any one of several congenital anomalies may be sufficient to initiate serious trouble. We have seen how loss of weight may precipitate the symptoms due to cervical rib or to periduodenal veils.

Again a normal adult ages physiologically with a progressive narrowing of the margin of safety in every part which, however, proves adequate to weather the minor strains of intercurrent infection, *et cetera*. The hidden anomaly comes to light symptomatically under similar conditions; the margin of safety already narrowed, fails abruptly and unexpectedly. A degree of myocardial weakness which could be ignored in the otherwise normal individual may prove sufficient to reverse the shunt through a patulous foramen with startling results.

A congenital anomaly may lead to disease in a great variety of ways: it may interfere with a physiologic process as in pregnancy, it may hasten the functional failure of an organ as the kidney, it may by its perversion of normal anatomical topography lead to disturbances of neighboring structures (intestinal obstruction from Meckel's diverticulum). By its abnormal structure it may be the site of unusual irritation, thus offering a favorable opportunity of tumor development. Similarly, its abnormal relations may invite infection just as harmfully as do the valve leaflets distorted by rheumatic infection.

All these phases of the question we visualize quite readily; the lesions are gross, the results obvious. But can we not go further? We said at the start that there are many aspects of this question which we cannot intelligently discuss. We are helpless still in explaining such hereditary phenomena as allergy; we do not know

what the underlying basis is nor what factors determine the appearance of symptoms sometimes after years of life without any manifestation whatever.

Between these two extremes, the gross anomaly on the one hand, and the still undefinable hereditary tendency on the other, there must be a group about which we can hope to learn. In this would be included, for example, organ hypoplasia. Whether or not an organ smaller than normal is an anomalous organ may be merely a matter of definition. But it is very important to know whether such an organ when subjected to factors of aging, infection or strain, will fail in one way or another sooner than one of more usual size. This problem as it applies to the heart is now being studied in the Robinette Foundation at our University Hospital by Drs. Wolferth and Wood.

In closing, it is unnecessary again to emphasize the diagnostic moral pointed by these remarks. It must be obvious that there is no age so advanced at which a previously silent congenital anomaly may not first make itself troublesome. Always some exciting factor must cooperate to this end but we are often unable to identify such factors. Certain ones are so frequently responsible that we should be quick to suspect a congenital lesion when new symptoms appear in an individual recently the subject of such influences.

Finally, one cannot help philosophizing concerning the influence of no matter how trifling a deviation from the normal upon the survival of the individual. It would seem that we are tending to a greater and greater appreciation of this principle in the study of the individual and his reactions to his environment. From such a point of view, congenital lesions of every grade must play a most important part.

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DEPRESSOR SUBSTANCE OF LIVER IN THE TREATMENT OF HYPERTENSION.*

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Liver products now generally used in the treatment of disease are of recent development, although liver substance as medicine in some form was used by the ancients. Prior to the development of the study of anatomy the Babylonians and Assyrians, who foretold futures by reading omens in the liver, recognized three main lobes. This first studied viscus, because of its vascularity and the association of blood with life by early races, was considered the seat of the soul. This belief was present even with the early Greeks and Romans, and the year 274 B. C. is mentioned in the writings of Pliny as the date the heart was first used for divination purposes.

The medicinal uses of liver by the ancients is set forth in the last book of Paulus Aegineta, written twelve hundred years ago, as follows, "Hepar, the Liver: if that of a mad dog be roasted and eaten, it is said to relieve those who have been bitten by him. The sanies of a boiled goat's liver relieved nyctalopia when injected into the eye. They also direct the vapour of it, when boiling, to be received into the eyes, and also to be eaten. They say that it rests epileptics if eaten, and that the liver of the buck-goat does the same. The liver of a lizard when put into carious teeth relieves the pain. That of the wolf is added to the hepatic medicine prepared from eupatorium. The liver of an ass when roasted is of use to epiliptics when fasting. That of a bear, when dried in its fresh state and triturated with wine, is drunk for the bites of reptiles. The liver of the Cormorant, when dried and taken in a draught, makes calculi to be discharged."

In the nineteenth century, Claude Bernard first classed the liver as an endocrine organ in addition to its exocrine function, which is the formation of bile, after his discovery that sugar was formed from the blood by the liver when no sugar had been eaten.

This discovery was made by finding dextrose in the hepatic vein of a dog which had been fed wholly on meat.

For many years biliary products, either bile or bile salts, have had a recognized place in medicinal therapy, the application of which was extensive, first in France.

In 1926 and 1927, which was about the time that depressor liver substance became available for treatment purposes, Minot and Murphy demonstrated that the health of individuals suffering from pernicious anemia could be greatly benefited and their blood cells returned to approximately normal by the ingestion daily of an adequate amount of a substance found in

*Read at the sixtieth annual meeting of the Medical Society of Virginia, in Charlottesville, October 22-24, 1929.

mammalian liver. The benefits were obtainable by eating raw or cooked liver or by taking a liver extract. The liver fraction containing this hemopoietic hormone differs from the fraction containing depressor substance in that it is water soluble only, the other being alcohol soluble.

Heidenhain published for the first time, in 1891, a record of an experiment showing a temporary fall of blood pressure following intravenous injection of liver extract. In 1909, Bingel and Strauss made a series of similar observations. In 1911 and 1912, Miller and Miller reported that extracts of the liver invariably gave a temporary fall in blood pressure in animals. Abel and Kubota, in 1919, described a temporary fall in blood pressure following intravenous injections of liver extracts, and discussed the possibility of the result being due to the histamine content. All of these earlier observations were made by intravenous injections in laboratory animals.

In 1924, M. J. Macdonald, of St. Catherine's, Ontario, first observed clinically the depressor effect of liver extract in the human being. This came about in the course of experiments during the previous year, working on the idea that the liver was a defense organ with some special influence that might be utilized in the prevention of cancer. His observation that certain liver extracts exerted a notable depressor effect caused him to study, with the extract, 33 cases of clinical essential hypertension. The results were so encouraging that an intensive study, physiologically and chemically, of liver extracts was then begun. An observation by Macdonald was that blood pressure was temporarily lowered after an injection of histamine, whereas a lower pressure effect was maintained for a much longer period by the extract.

Parallel with Macdonald, R. H. Major, of the University of Kansas, was working on the same problem. His researches advanced around guanidine and methylguanidine, and he showed that prolonged pressor effects were brought about by these substances and that liver extract controlled this pressor effect, parallel with the reduction in excessive blood pressure.

The work of Banting which isolated insulin by alcoholic fraction of the pancreas stimulated Harrower to apply this method to other tissues, and in the summer of 1925 he succeeded in preparing an active, stable solution of liver extract by alcoholic fraction. This liver principle he calls anabolin, because he considers that it brings about detoxication and lowered blood pressure as an anabolic process in building up amino-acids into urea.

Professor A. Sato, of Japan, asserts, after experimenting with over 1500 rabbits, that liver extract contains, "a detoxication hormone of the liver." He reports experiments indicating that liver extracts are capable of nullifying the convulsive action of histamine, chloroform, and ammonium chloride. He also shows that the extract will overcome the toxic effects of large doses of urea.

Inasmuch as my experience in the treatment of hypertension with liver extract, over a period of three and one-half years, has been exclusively with anabolin, I feel it would be well here to give the essentials of preparation, its standardization, and chemical analysis.

Preparation: "Mature, healthy livers are cut up, freed from blood and bile, and drained. The diced material is then placed in a rotating pebble mill with alcohol, and the mixture is allowed to grind for a prolonged period. The cream-like product is then allowed to separate, the cloudy alcoholic solution is decanted, the precipitate of liver debris being separated by passage through a pressure filter. The solid residue is discarded. The clear alcoholic solution is then concentrated in vacuo. At a certain degree of alcoholic strength the precipitate is formed, and the alcohol is then distilled for further use. An aqueous solution of this precipitate contains the anabolin and several other soluble proteins and amino-acids in varying amounts, such as peptone, choline, and histamine." These four substances have different solubilities, and in this way they are all satisfactorily separated from one another. The finished anabolin product is water soluble and may be preserved with customary preservatives, such as chlorbutanol, etc. Sterilization is accomplished by passing the solution through a Berkfeld filter. The residue for oral administration is produced by vacuum desiccation of the finished standardized solution. The dose is based upon the relation of the powered concentrate to the original amount of solution. This residue is diluted with milk sugar and made into tablets each representing 1 c.c. of standardized solution.

Anabolin solution is standardized by kymographic tracing of blood pressure after injec-

tion of a 10 kilogram dog. One cubic centimeter of the solution is made to produce a 12 mm. drop in blood pressure. Uniformity of effect is determined by comparison between injections of the standardized solution into several different dogs of similar size and obtaining similar reductions. It is also determined by reinjection of the same dog bringing about the same fall in blood pressure at subsequent intervals.

An analysis of anabolin shows that choline is entirely absent and histamine is in negligible quantity (.0001 gramme per c.c.). There are some investigators, among whom are Dale, of the National Institute for Medical Research, in London, and Prof. Abel, of Johns Hopkins University, who still believe that histamine in liver extract is the substance responsible for its depressor effect. Some of the observations by Harrower, in the support of his contention that anabolin is entirely a separate substance from histamine, are that histamine is virtually insoluble in ether while anabolin is soluble, and the depressor effect of these two substances is somewhat different in character. The depressor effect from histamine is sudden and of short duration, whereas, after an injection of anabolin, the depressor effect is not so sudden and far more lasting.

In laboratory animals, when the blood pressure has been elevated from an injection of methylguanidine, the blood pressure will slowly fall to normal after an injection of liver extract but does not go below normal unless a very large dose is employed.

This is in marked contrast to the sudden drop from an injection of histamine. A dosage of histamine necessary to lower the increased blood pressure, produced by guanidine, will also depress the normal blood pressure, whereas 15 or 20 times the dosage of liver extract required to reduce the pressure to normal may be required to depress the normal pressure.

It seems well proven that liver extract is not toxic, even in very much larger doses than is necessary to reduce an elevated blood pressure. In conditions where hypertension is organic in origin and necessarily compensatory, such as renal sclerosis, the effects of liver extracts are negligible. Clinical application, however, so regularly promotes a feeling of well-being that it seems consistent to conclude that much of this benefit is due to detoxication effects in arousing the liver to renewed anabolic activity.

My clinical observations, after three and one-half years of very active use of liver extract in the form of anabolin, has convinced me of its extreme usefulness in treating hypertension and associated subjective complaints. Where there appears to be definite evidence of arterial sclerosis and renal sclerosis, it might seem that liver extract should not be used. However, in such a vast majority of cases where this is present, there is an over-lapping toxic state which in itself may be responsible for some of the complaints of pressure elevation that I have found it wise even here to use this remedy. The clinical improvement brought about is often far beyond expectation and such complaints as headache, vertigo, and general lassitude are relieved very much out of proportion to the associated reduction in blood pressure. Such toxic symptoms may be relieved after an injection of 1 c.c. of liver extract when the reduction in pressure may amount to no more than 10 mm. It is not unusual to see a very rapid decline in blood pressure in hypertension cases so treated which are not due to organic change. Often there may be a drop of as much as 30 mm. from a single injection. My experience has been such as to justify a moderately slow reduction in blood pressure and I find it seldom necessary to use more than one injection of 1 c.c. daily. It is well to regulate the habits of the individual and to prescribe a suitable diet in conjunction with the treatment with liver extract. I am sure this plan is entirely rational, as the surcharged system is aided in the elimination of waste products, thus lessening the strain on the vital organs. I have not observed any contraindications clinically to therapeutic doses of anabolin. It is unquestionably of value in the treatment of toxemia of pregnancy and pre-eclampsia.

Granting that in many cases of toxic hypertension the attack will be of short duration, it is my belief that recurrences of this state are forerunners of, and conducive to, more permanent hypertension, and I believe it best to treat these, as all cases, with liver extract in conjunction with regulation of diet and habits. It may be argued that this type of case can be treated satisfactorily by regulation of habits, exercise, and diet, and, supposing that this may be true, I am sure such treatment without liver extract would not be so prompt, nor would a sense of well-being be established as early.

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One of my earliest cases treated with anabolin was a lady of 52, who had carried a high blood pressure, to my personal knowledge, for more than 10 years. During this period, she complained greatly of headache and shortness of breath on exertion. Ten years prior to starting treatment she had a rather severe nasal hemorrhage, and at a subsequent period, a pulmonary hemorrhage due entirely to the high blood pressure. Her blood pressure in 1919 was systolic 220 and diastolic 140. It was necessary to resort to blood letting at intervals of 4 to 6 months to bring about relief from severe headache. This program of bleeding was kept up from 1919 to the early part of 1926. Usually after the removal of one pint of blood, symptomatic relief, with a drop in blood pressure of approximately 25 mm. of mercury, would follow. In July, 1926, anabolin therapy was begun. Since that time it has not been necessary to bleed her. I have found that she feels best when the blood pressure is S. 190 and D. 110,—this seems to be her physiological blood pressure level. With the advent of headaches or general lassitude, she reports for examination, and I usually find with these symptoms that the blood pressure has gone up to about 220 systolic. Usually four to six daily injections of 1 c.c. of liver extract will reduce the blood pressure to the physiological level of 190. With the first injection there almost invariably comes relief of headache and lassitude. Such treatment has been necessary in this particular case from two to four times a year in order to keep her comfortable.

I have recited this case more in detail to show the effect of treatment in the type of case where there is evidently considerable organic change with a superimposed toxic element.

Many cases that I have treated have remained at a practically normal blood pressure level over a period of from one to three years following several daily injections of anabolin. It is seldom necessary to give a continuous course of injections for longer than one month, even in the most extreme cases.

My own father, who is now 78 years of age, was treated one year ago with anabolin, his blood pressure being 190 systolic and 120 diastolic. He complained of extreme dizziness, lassitude and physical weakness. After 10 daily injections the systolic pressure was brought down to 140 and the diastolic to 90. At the present time, one year later, his blood pressure is S. 140 and D. 100, and he is a comfortable active man for his years.

I have treated many cases of hypertension immediately following attacks of apoplexy, with liver extract, and in several instances have noticed after a series of daily injections, bringing the blood pressure to a reasonable low level, that the blood pressure has remained low for a period of months without a continuation of the injections. I have not been able, clinically, to get satisfactory results with liver extract given by mouth. This has been disappointing to me, and is at variance with Harrower's claims.

I have not attempted to present my treated cases in tabulated form because the therapeutic effect of liver extract has now become generally recognized. During the past three and one-half years I have used anabolin therapy in a series of 150 cases and have been able, almost without exception, to bring about reasonable symptomatic relief and in a vast majority a very marked reduction in the state of hypertension.

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DISCUSSION.

DR. W. B. PORTER, Richmond: When one considers the broader aspect of hypertension he is immediately confronted with many conflicting ideas. In a discussion of any therapeutic measure it is wise to carry constantly in mind the classification of hypertension as we see it clinically. Hypertension is classified into two major groups: Group 1, which is associated with a primary renal disease, the so-called diffuse glomerular nephritis; and Group 2, which begins primarily with hypertension, to be followed by the secondary vascular changes which affect in a varying degree the different members of the somatic systems. Evidence is increasing on all sides that the structural changes in this latter group are not the fundamental factors involved at the beginning, but the flood gates of peripheral circulation closed by a pathological constriction of the arterioles, thereby raising peripheral resistance and increasing intravascular pressure. Any procedure which will open these "flood gates" is rational and will lessen the progression of vascular pathology. In the past we have labored under the impression that in this latter group hypertension was a necessary thing. I think the more evidence we get the more we are convinced that that is a mistake.

I think it is unfortunate that Dr. Willis did not catalog his cases into the different types of hypertension, including charts showing the specific elevation in h's cases, the number of treatments that were necessary, the length of time he maintained normal pressure or reduced pressure between injections, and the general characteristics of the individuals he has treated.

I read the paper with a good deal of interest and feel that Dr. Willis is getting results with this substance which are suggestive and warrant consideration by each of us. I, myself, have used in some twenty cases the substance formerly made by Lilly. Frankly, I was disappointed. However, the field is promising, and I think it behooves each of us to think about the subject along the lines which Dr. Willis has discussed, and that in that large group of the cardiovascular cases with relatively normal renal function we are justified in treating seriously any remedy which will reduce the hypertension, provided it does not cause any harmful effect upon the heart muscle.

I think Dr. Willis, in publishing his paper, would do well, for the sake of those of us who are interested in the subject, to go to the trouble of classifying his cases and tabulating them, so that we would have these data before us for comparison with other reports which have come out in the last few years on other substances which are used for the relief of this rather serious malady.

DR. WILLIS, closing the discussion: I considered it wise to present this subject for consideration, because I know I have gotten symptomatic relief in a large number of patients. I have treated approximately one hundred and fifty patients in the last three and a half years who had definitely elevated blood pressure, and I feel sure there have not been five per cent of those patients in whom the blood pressure has not been materially reduced. Even in cases that have had strokes of apoplexy, with very high pressure, I have been able to reduce the pressure in many to normal and months afterward have found the pressure still normal in some cases.

The men who try to do something and fail are infinitely better than those who try to do nothing and succeed.—*Selected.*

SYMPTOMATOLOGY OF HYPOTHYROIDISM.*

By PHILIP S. SMITH, M. D., F. A. C. P., Abingdon, Va.

The symptoms resulting from hypothyroid states have been of comparatively recent recognition. The attention of the early workers was directed primarily to overactive disorders of the thyroid gland. The mere mention of such names as Graves, Parry and Basedow illustrates the point in mind. It was not until a number of years later that Gull, Ord, the Reverdins, and others recognized the relationship between deficient thyroid secretion and the disease entities, myxedema and cretinism.

Still more recently was there a general appreciation of the clinical importance of hypothyroid states which represented neither of the advanced conditions, cretinism nor myxedema. In fact, moderate hypothyroidism was not given a legitimate status in the mind of the average physician until after the introduction of indirect calorimetry. Even after the metabolism apparatus became simplified and generally available, most patients referred for metabolic determinations were those suspected of hyperthyroidism. A review of our metabolic records during the past eight years shows a strikingly increasing percentage of patients each year with lowered metabolic rates. This does not imply that the local incidence of hypothyroidism is greater than formerly, but rather the fact that it is being more frequently suspected clinically, and metabolic tests more generally made, in our patients. Among 19,400 patients examined, our records show a diagnosis of hypothyroidism (including myxedema and cretinism) in 240,—or slightly more than 1 per cent of the total.

The classical pictures of cretinism and myxedema are recognizable without much difficulty. Most cretins are thought to have little or no thyroid secretion at birth. Others who have normal thyroid function post-natally appear to lose suddenly most of their thyroxin output, probably as the result of systemic infections. It is infrequent that cretinism is suspected before the sixth month of life. After that age the observant mother may note that certain mental and physical developments, normally expected, fail to materialize. Usually at first it is merely a lack of interest in objects given to amuse the infant, or a failure

*Read as a part of a symposium before the Southwestern Virginia Medical Society, at Radford, Va., March 24-25, 1930.

to sit up unaided at the expected time. Later, if the disease is not recognized and combated, the long bones enlarge but do not lengthen; the skull may become elongated from front to back; dentition is delayed; the soft tissues are pudgy and lack tone; the hair is dry and coarse; the "pot-belly" with its frequently associated umbilical hernia causes maternal concern; the open mouth, thick tongue and broad face give to the features an inane expression which reflects the lack of mental development. And yet, many such children are allowed to pass the first twelve months before the family physician is given the opportunity of engaging in one of the most satisfactory therapeutic procedures in the entire field of medicine. The chances of a normal physical and mental development are greatly reduced if treatment is not begun during the first year of life.

Myxedema, like hyperthyroidism, has a much higher incidence in females than in males. There is much evidence, clinical and experimental, to suggest that the rate of exhaustion of thyroxin in the body of females is higher than in males. Usually the syndrome does not develop until the individual approaches middle life when recessive changes in other endocrine glands also may be expected. In other cases the thyroid deficiency, developing earlier, probably results from a previous acute thyroiditis. Though occurring usually after physical and mental maturity has been attained, the symptoms of myxedema have many points in common with cretinism.

Typically, the soft tissues appear bloated with irregularly distributed pads of non-pitting edema, composed of a mucin-like substance infiltrating the deeper skin strata and mucous membranes. The features are stolid, the expression lethargic, the tongue thickened, and speech slow and drawling. Loss of hair, brittle, striated finger nails, and the dry, thickened, inelastic skin suggest trophic changes; pigmentation of the skin is not infrequent. Mental apathy, with impaired memory, headache, and drowsiness indicate the low ebb of cerebration. A true psychosis may ensue. Excessive clothing is worn to combat cold; fatigue and weakness increase proportionately with gain in weight. Metrorrhagia or early amenorrhoea indicate the probable relationship between the disturbed thyroid and ovarian functions. The heart rate is slow and the blood pressure frequently is lowered. Constipation and digestive disorders are common, while sugar tolerance is usually increased as nitrogen and water are retained and anemia develops. The picture is strikingly like that of a hibernating animal.

Metabolic determinations in both cretins and myxedematous patients are merely confirmatory and serve as a guide to the required dosage of thyroxin or thyroid extract. Rates as low as minus 40 may be encountered in well developed cases. A rate above minus 18 practically negatives the diagnosis.

The third group of patients with hypo-thyroidism includes those with symptoms reflecting less marked thyroid deficiency. Diagnostically, they require a greater clinical acumen. Doubtless a large percentage of them are not recognized, as their symptoms oftentimes are interpreted as functional states,—particularly the neuroses. Many are detected by the more general employment of metabolic tests in individuals with ill-defined clinical syndromes.

I should not like to be understood as intimating that ever patient with a lowered metabolic rate is an instance of *primary* hypothyroidism. In our experience, some with lowered rates do not tolerate thyroid therapy and, hence, are not regarded as having deficient thyroid secretion.

I recall an emaciated young woman, of a neurotic type, who gave a persistently lowered metabolic rate. She was not appreciably helped by desiccated thyroid gland. With appropriate treatment of her ureteral stricture and low-grade pyelitis, she was induced to increase her daily caloric intake to a figure commensurate with her body needs. Following a satisfactory gain in weight, her symptoms largely disappeared. Instances of this sort have been encountered not infrequently during recent years when the feminine ambition to retain the prevailing slender, boyish figure necessitates a state of semi-starvation and under-nutrition. From a therapeutic standpoint, the "Lucky Strike" in such cases is neither nicotine nor thyroid extract, but rather a full dinner plate containing not only the needed calories but an equally important vitamin-rich ration.

In 1926 I reported the incidence of lowered metabolic rates in twelve girls and young women, most of whom had symptoms clinically suggestive of hyperthyroidism. In some there

was tachycardia; 50 per cent were under their ideal weight, age and height considered; 63 per cent complained of nervousness and weakness; and in 87 per cent some degree of thyroid enlargement was noted. Incidentally, adolescent goiter is frequently associated with lowered metabolism. Some of these girls were definitely relieved of their symptoms by adequate doses of thyroid extract. Others in the group were not materially benefited even after an elevation of their metabolic rates had been effected. In view of the well-known specificity of thyroxin or thyroid extract in relieving the symptoms resulting from a primary hypothyroid state, absence of clinical improvement in patients with lowered metabolic rates practically acquits the thyroid gland as an etiological factor.

Since 1926 our records show an increasing number of young females with abnormally low rates without typical symptoms of hypothyroidism. Plummer's theory of a "secondary hypothyroidism,"—a type in which he believes the lowered metabolic rate and symptoms "exist when the body's physiological reactions do not demand the maintenance of a normal level of thyroxin in the tissues,"—is of interest in this connection. Starvation, chronic infections, wasting diseases, pituitary and ovarian disorders, and certain psychoses are thought to cause such depressed metabolic states.

The lassitude, stunted stature, increased carbohydrate tolerance and mental lethargy of the natives of the tropical zones suggest a hypothyroid condition as characteristic of such races. Even in our Gulf States we see evidences of similar, though less pronounced, physical and mental inertia. In a number of presumably healthy, normal young women attending the University of Florida, a series of metabolic determinations was made; the abnormally low rates obtained, as compared with accepted standards of normal, further indicates the probability of an adaptation of the body to its temperature and climatic environment without thyroid abnormality. In the absence of symptoms, there would be little justification in raising with thyroid extract the metabolic rates of these girls to a level maintained by a similar group of healthy young women in our northern universities.

In this connection, it is interesting to note that during 1927 and 1928 our records of patients with metabolic rates under plus 20 per cent show that the lowest average rates are obtained during the Spring and early Summer months as the sun's rays are filtered through a diminishing atmospheric belt in its approach to the summer solstice; thereafter the average basal metabolic rate rises through the Fall unless there is unusual lack of cloud. These investigations were prompted by Dr. James H. Smith, of Richmond, Va., who had previously noted practically similar curves from a statistical study of his patients' metabolic rates.

The clinical picture in moderate, primary hypothyroidism varies greatly. While there are striking exceptions, the symptomatology is usually in direct ratio to the degree of thyroid deficiency and suboxidation. Thus, we may encounter patients with symptoms so atypical as to tax our diagnostic powers until metabolic tests furnish the clue; others are quite characteristic early in the course of investigation.

I believe that mental and physical fatigue, easily induced and otherwise unexplained, is one of the most common complaints. A history of a previous sub-total thyroidectomy or thyroiditis should arouse our suspicions of thyroid inadequacy. When occurring, as often happens, in women approaching the menopause, other symptoms, usually attributed to the climacteric, are frequently encountered. Dull headache, nervousness of various types, drowsiness, loss of hair, some thickening and drying of the skin, chilliness, subnormal temperature, joint pains, irregular or scanty menstruation, constipation, digestive disorders, obesity, bradycardia and lowered blood pressure are other features of the disease which may be present.

However, we do not expect all of these symptoms and physical stigmata in the same individual. Like other disease entities, the classical picture is not usually complete in all details. Many patients, as I have indicated, present as their major complaint symptoms that are not generally associated with hypothyroidism, though their prompt response to specific therapy leaves no doubt as to the causative factor. These more atypical expressions of the disease can be understood when it is recalled that hypothyroidism, with its uniform thyroxin reduction, affects, directly or indirectly, the normal function of practically every organ of the body.

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Naturally, in children moderate hypothyroidism presents a clinical picture quite different from that ordinarily observed in women of middle age. It's relatively infrequent incidence in young individuals, the unsatisfactory cooperation of most children in making metabolism tests, and the lack of uniformity in the tables of normal oxygen consumption for those under fourteen years of age, add greatly to the difficulty of diagnosis. Some of these children have alert minds and normal physical development; most of them are mentally sub-standard with the Binet tests, or their school-grades reflect their handicap. A tendency to over-weight, fatigue, dental abnormalities, and in the more advanced cases other symptoms quite suggestive of rickets may be present.

Our records include relatively few male adult patients regarded as hypothyroids; there is a probability that many more have been overlooked,—particularly in the earlier years of our work. Briefly, unexplained fatigue, inability to work with sustained mental concentration, vague nervous symptoms, increasing weight, and the necessity of wearing heavy clothing to maintain body comfort should prompt metabolic tests. Occasionally, the male syndrome is quite as typical as in females.

In conclusion, I would suggest the need of more general appreciation of thyroid deficiency in many ill-defined complaints, especially in females of all ages; the more frequent employment of metabolic determinations in such patients; recognition of the possibility of contributing causes of lowered metabolism other than "thyroid failure"; and, finally, intelligent correlation of symptoms, physical signs and metabolic rates. Symptoms and pathologic changes, rather than mathematical calculations of oxygen consumption, demand our recognition; metabolic tests, like other laboratory aids, are often most helpful in diagnosis and treatment.

Johnston Memorial Clinic.

VARICOSE VEINS.*

By J. O. FITZGERALD, Jr., A. B., M. D., Richmond, Va.

By the processes of elimination human ailments are being put aside as we conquer them, and the lesser ills are acquiring space and time for study and correction. Perhaps the main reasons why varicose veins have not been studied before is because death seldom results from them. They do, however, rank high in contributing to personal disability and suffering to those afflicted by them.

Word derivation and building always seems most interesting, and in any subject is the first thing to study, but with varicose veins we derive less than the usual help, in the "shade" of meaning, for it comes from the Latin "varicosus," which simply means dilated. Therefore, a varicose vein is a dilated vein, and may be classified according to various methods, according to the shape of the dilatation, according to the pathology of the dilatation, according to the size of the dilatation.

By common acceptance, "varicose veins" usually is used to refer to affected veins of the lower extremities, although it can mean any dilated vein.

The pathogenesis is being studied more detailedly and carefully, and, while there is the old idea of "back pressure" from mechanically narrowing the lumen or obstructing the flow of blood in the veins, at some point, this may have an effect, which is contributory. The more recent and perhaps acceptable theory is that endocrine disturbances have a causative influence. Infectious processes frequently precede their development, and it is not infrequent to observe them in post-typhoid and asthenic states. They frequently occur during and after pregnancy. They are always aggravated by occupations requiring much standing.

They are more frequently in multiparous women than in other people, and the endocrine unbalance exisiting during pregnancy is probably responsible for the thought suggesting this causative factor. The endocrine unbalance is believed by Delater to exert its influence through the sympathetic nervous system.

The symptoms described by the patients are sharp, lancinating pains along the parts affected, aching and weight in the limbs, fatigue that develops easily and quickly, and itching. Objectively, you see the dilatation itself, which is the diagnosis. There is frequently eczema or ulceration, or areas of pigmentation that represent the burned over battlefields, where eczema and ulceration have left their shell holes and charred battle areas, as the tissues wrestled with and overcame the processes which were attempting destruction.

Treatment has been, formerly as now, di-

*Read before the Clinical Club of Stuart Circle Hospital, Richmond, Va., February 26, 1930.

rected at either support or elimination of the vein.

Mechanical support has been offered entirely as an external appliance of some elastic medium, either elastic bandaging, elastic stockings, cuffs, or gelatined bandages applied probably at weekly intervals, while calcium, parathyroid extracts, vitamins and general tonics have been used to increase the strength of the vein walls as a part of the general body building program.

Long periods of rest in bed, with elevation of the affected member, have been resorted to in some cases, especially where ulceration existed. Usually this will cause the ulcers to heal and, with proper mechanical support, they may or may not recur.

Surgery has been resorted to where it could be proven that the deep veins were not occluded and the removal of the superficial veins would not destroy the circulation of the part, and, either by excision of a portion of the vein or by "stripping" out the most involved parts of the vein, the return circulation has been directed through the deep veins, which are supported more adequately by the muscles and fascia. This, of course, calls for a period of quiet and disability following the operation, and this period of inactivity, with its moderate amount of suffering, has been a reason for continuing with partial disability in many of these cases.

Humphries, Fraikin and Burrell report curing cases of long standing by ultraviolet irradiation. The speaker can understand how ultraviolet may help an eczema with pruritus, how it can perhaps increase the strength of the wall, but not how it can reduce the size of a dilatation. But several patients have been given several weeks of ultraviolet irradiation purely as an experiment, and in no case was there the slightest noticeable improvement. But perhaps the most satisfactory treatment of varicose veins is obliteration by injection of some mild escharotic which, when diluted by tissue juices in the body, becomes harmless later on.

McPheeters seems to be the principal and earliest American disciple of this treatment, while Sicard, Borcherds, Birendemfel, Linser, and others, represent the foreign schools. Cases are being reviewed in various papers, which draw conclusions from ten or fifteen cases injected, or in some cases 53,000 is the grand total from which deductions are drawn. Fatalities are reported from injection treatments as about one in 4,000, as compared to one in 240 treated by surgery. Embolism is so rare as to be doubted as the cause of death, but has been listed in a few cases, where autopsies were not done, as the cause of death.

Various fluids used are, in part, solutions of glucose, glucose and sodium chloride, sodium salicylate, mercury iodide, argochrom, mercury bichloride, alcohol, quinine and urethane hydrochloride. There are a few which contain some anesthetic to prevent cramping —for instance, varicophtin. The speaker has confined his uses so far to glucose, glucose and sodium chloride, sodium chloride, and quinine and urethane.

The patient is examined to attempt to exclude the possibility of occlusion to the deep vein, then the vein to be injected is chosen, and a tourniquet applied above to distend the vein, also one below to prevent the inflow of fresh blood. A comfortable position is selected for both patient and operator, and the vein is pierced with a sharp, short beveled, fine needle and the blood is removed from the vein either by removing the proximal tourniquet and stroking along the vein, then reapplying the tourniquet, or by aspirating the blood. Then the selected fluid is injected in an estimated approximate amount according to the fluid used, and the size of the vessel injected. Some form of double control syringe, of 10 c.c. or 20 c.c. capacity, with a needle locking device seems almost essential. Utmost care must be used to avoid spilling the smallest quantity of fluid into the tissues, and, if the vein is penetrated through, the area should be abandoned until the puncture has time to heal, for even the leakage through the needle hole may be sufficient to cause pain and chemical inflammation. In one case observed when the smallest quantity of fluid was so left in the tissues, a slough occurred, and has been about three months in healing. This, of course, is embarrassing and unsatisfactory, and thwarts the good by upsetting the reputation of the method. Utmost care should be used when the needle is withdrawn to insure no leakage into the tissue through this needle hole, and compression in some positive form should be exerted over the area chosen. After about twenty minutes the tourniquet may be released and the patient walks from the office. He should be instructed to walk and exercise

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moderately for the next forty-eight hours, as this will help keep the deeper vein massaged, so as to empty the small amount of fluids which may gain access to them through anastomosing branches.

Tell the patient, however, that there will be some tenderness, perhaps redness, along the injected branches. This is to be expected when the method is understood; also tell the patient to expect some cramping for three to ten minutes following the injection. This cramping is most probably due to the irritating effect of the injected fluid upon the nerves of the veins and their branches and seems to affect different muscles of the leg according to which areas are injected.

In choosing the parts to be injected, it is better, generally, to begin in the more distal portions and work forward, injecting 3 to 5 inches of a vein at a time.

The results have been most satisfactory, so far as venous obliteration is concerned. Unshapely legs have been distinctly improved, and this certainly constitutes a consideration with both male and female. It is unusual for patients not to say they feel better even two or three days after the first injection, and as obliteration progresses they are gratified.

The patient may be informed that a varicosity will not recur in the obliterated vein, but frequently a parallel vein may later develop a varix; if it does, it may be then injected.

Of about eighteen cases treated, two have been somewhat disappointing,—one mentioned above, which sloughed, and another which had been found when suffering with erysipelas. The erysipelatous process was allowed to subside and, after two weeks, the patient was injected in the opposite leg. Forty-eight hours later she developed a case of erysipelas in the injected leg; however, the process subsided after several days, and the patient is now gratified by the result obtained in the obliteration of her varicosities. Notwithstanding this, it is not the speaker's intention to inject glucose solution into a patient who has recently had erysipelas. It is his belief that the occluded vein, with its dextrose and blood clot, furnished suitable media for the process to develop.

In conclusion, it would seem that there has been enough work done with injection of veins to remove it from the experimental stage. Perhaps a more ideal injection fluid may be evolved, but the ones we now have from which to choose already allow some latitude in the matter.

LIGATION OF THE EXTERNAL CAROTID ARTERY TO CONTROL NASAL HEMORRHAGE.*

By ALLEN T. HAWTHORNE, M. D., Winchester, Va.

The average case of epistaxis can usually be controlled by the methods commonly advocated in textbooks, such as anterior and posterior tamponing, hemostatics, sera, radium, or the cautery. However, there occasionally occurs a case of nasal hemorrhage which ordinary means will fail to control. A hemorrhage of this type can be of such a degree as to become alarming both to the physician and to the patient. This type of hemorrhage usually follows some operative procedure within the nose, or some violent injury to the nose, although F. T. Hyde, of Port Angeles, Wash., reported a case of idiopathic nasal hemorrhage which could only be controlled by ligation of the external carotid artery.

The cases on record where ligation of the external carotid artery has been resorted to, to control nasal hemorrhage, seem to be comparatively rare. Why this should be, I do not know, because certainly this method must have been used more than the literature would indicate. Hodges McKnight, of Fort Worth, in reporting a case of carotid ligation to control epistaxis, states that, after a rather exhaustive review of the literature on this subject, he could find only seventeen cases reported.

The ligation of the external carotid artery is a comparatively simple procedure, and I believe that it should be resorted to early in all cases of severe nasal hemorrhage which cannot be checked and kept under control by the methods usually employed. There can be no advantage in delaying the ligation, when there are repeated outbursts of severe hemorrhage even when the nose is securely and efficiently packed. Delay simply means that the patient's condition is worse, when finally ligation has to be resorted to in order to save the patient's life. All of us appreciate the fact that an exsanguinated patient makes a poor surgical risk.

None of the standard textbooks on diseases of the nose and throat seem to mention this method for controlling nasal hemorrhage, and

*Read before the Virginia Society of Otolaryngology and Ophthalmology at its annual meeting in Roanoke, Va., May 3, 1930.

I think that this fact should be impressed upon the profession, in order that in the future this procedure might be incorporated in all the text and reference books dealing with rhinology.

Some may criticize a ligation only of the external carotid artery to control nasal hemorrhage on the grounds that the blood supply of the nose is derived both from the internal and external carotids. It is true that the blood supply of the superior portion of the nose is derived from the anterior and posterior ethmoidal branches of the ophthalmic artery which is a branch of the internal carotid. But the major portion of the blood supply of the nose is derived from the internal maxillary, facial, ascending pharyngeal, and palatine arteries, all of which are branches of the external carotid. The cases on record bear out the fact that ligation of the external carotid alone will control nasal hemorrhage.

I wish to report the following case of my own:

On May 28, 1929, F. C. P., a blacksmith, forty-seven years of age, was referred to me by Dr. L. M. Allen, of Winchester, Va., with the following history:

On May 25th, while engaged in a fist fight, he was struck by his opponent with a brass knuckle above the right eye and on his nose. There was a moderate amount of hemorrhage at the time of the injury which was readily checked by pressure applied to the nose by the patient himself. The following day there were several slight hemorrhages. Two days later the patient returned to his occupation. Two hours after this, while shoeing a horse, there was a sudden gush of blood from the right nostril and from the mouth. The patient immediately stopped work, went home, and kept perfectly quiet. The hemorrhage ceased after a short while. There was no more bleeding of any moment until that evening. At this time there was another sudden and profuse hemorrhage which was beyond the control of the patient or members of his family. Dr. L. M. Allen was called and succeeded in checking the hemorrhage by packing both nostrils tightly with cotton soaked in a solution of 1:1000 adrenalin. The next morning at 9:30 there was another alarming hemorrhage, although the nose was still packed. At this time the patient was brought to my office.

Examination showed the man to be slightly pale, very nervous and anxious, but with a pulse rate of only 80. There was a contusion surrounding the right eye, and a slight abrasion on the right side of the nose. There was no fracture of the nose. A small amount of blood was dropping from the right nostril, and also trickling down the pharynx. When the cotton packs were removed, there was a sudden hemorrhage from both the nose and the mouth. The bleeding was so profuse that it was impossible to locate the actual bleeding point, although it was determined that it was somewhere in the right nostril. A Stevenson nasal tampon was inserted into the right nostril, and the bleeding was finally controlled. The patient was sent to his home and put to bed. An hour later I was notified by telephone that there had been another sudden and profuse hemorrhage while the patient was at rest in bed. I then had the patient admitted to The Winchester Memorial Hospital. That afternoon the patient had two severe hemorrhages although the nose was still securely packed. Morphine sulphate gr. ¼ was given. and ice packs applied to the nose. The hemorrhage was finally checked by these means, after considerable loss of blood. An effort was then made to obtain blood from some member of the patient's family for a transfusion. but in this I was not successful. The following day, May 29th, there was no hemorrhage. The patient's general condition was good, the pulse remained around 70, but he was somewhat weakened and pale from loss of blood. A roentgenogram of the skull showed no fracture. The next morning, May 30th, at 9:00 A. M., while the patient was perfectly quiet in bed, there was a profuse hemorrhage. The post-nasal space was packed by Bellocq's method, and Stevenson's splints inserted into both nostrils. In spite of all this packing, it was quite a while before the hemorrhage was controlled. There was no further bleeding until the next morning at 10:00 o'clock, when, although the nose was packed both anteriorly and posteriorly, there was another severe hemorrhage. Realizing that packing could not control the situation, and still having been unable to secure blood for a transfusion, it was decided to ligate the external carotid artery. Under general anesthesia this was immediately done. The usual incision was made, the external carotid readily located and ligated, well above the bifurcation of the common carotid, with No. 2 chromic catgut. All

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packs were then removed from the nose, and there was no evidence of hemorrhage. The wound was then closed. The patient's condition was not good following the operation. He was given 1,500 c.c. of salt solution under the breast, and digifolen and camphor hypodermically. The patient responded readily to these supportive measures, and twenty-four hours later all stimulants were discontinued. Thirteen hours after operation there was a very slight oozing of blood from the right nostril. This was readily checked with one application of Monsel's solution. This was the last time that there was any bleeding.

The wound in the neck healed nicely in spite of a small stitch abscess which developed, and, on June 17th, eighteen days after operation, the patient was discharged from the hospital. Except for his secondary anemia, and weakness, his condition was good.

Six months after operation, the patient is following his occupation as a blacksmith, has had no further epistaxis, and apparently is none the worse for his rather trying experience.

Summary

1. Cases of epistaxis which defy ordinary methods of control do occur.

2. Ligation of the external carotid artery will control this type of epistaxis, and is a comparatively simple and safe procedure.

3. Cases where carotid ligation is indicated should be done early before the patient is practically exsanguinated.

4. Standard text and reference books should include this method of controlling epistaxis.

5. A case of severe epistaxis of traumatic origin is reported. This case was readily controlled by ligation of the external carotid artery, after all other treatment had failed, and the patient made an uneventful recovery.

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CEREBRAL THROMBOSIS.*

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The term "*Cerebral Thrombosis*," includes in its broad meaning, a thrombus or clot in a cerebral blood vessel and the concomitant infarction. The resulting cerebral oedema and softening of the brain substance are the direct results of the thrombus and are essential parts of the process and are contantly found in all cases of *Thrombosis*. Many people of this day are excellent condidates for *Brain Catastrophes*.

The normal functioning of the brain is dependent upon the circulation of sufficient or ample blood to all of its parts.

The blood pressure within the brain substance, at all times, must be maintained within certain definite limits. Exaggerations of pressure in either direction give rise to abnormal functioning of the brain. The blood supplied to the brain must be ample in quantity and of sufficient quality. The interchange of the blood within the brain cells must go on and must not, even for a short period of time, be interrupted. Any alteration in the flow of the blood stream or in the blood composition will bring about changed or abnormal cerebral functioning.

The presence of any degree of change of the blood vessel calibre, or lumen of the vessels of the brain, is attended by manifestations of such change. The manifestation of such change may be very slight or very gross. Both the slight and gross changes may be overlooked or wrongfully interpreted. The slighter changes or the mild cerebral disorders are overlooked on account of insufficient study, and are frequently classed as unimportant. The gross changes and the gross manifestations are often confused on account of the sudden, profound and abrupt gravity of the condition, and therefore are classed as the first evidences of the process. In such cases the fact is that the slighter evidences—most important evidences—have been entirely overlooked. Our attention has not been attracted to the case sufficiently to allow us to interpret the earlier manifestation of the process; e. g., psychic equivalent or Jacksonian epilepsy are often not discovered early, and may be entirely overlooked.

The skull is essentially closed, and there-

*Read at the meeting of the Medical Association of the Valley of Virginia held at Clifton Forge, Va., May 23, 1929.

fore an unyielding bony cavity. The arterial blood supply to the contents of the skull is large. The return flow of venous blood is free and is not hindered by any valves in the veins. In the usual or upright position of man, gravity largely assists in the rapid return of the venous blood. The absence of valves in the veins, and the upright position of man are not accidental provisions. The normal processes depend upon freedom from back pressure in the veins. For example, rapid occurrence of cerebral disorders occurs whenever the venous return is obstructed. The presence of a failing heart muscle is constantly attended by cerebral manifestation, varying from very transitory symptoms or delirium to complete unconsciousness, as is seen in the syndrome of heart block.

The maintainance of a proper, normal blood pressure in the brain substance, therefore, is of vital importance in the health and life of the human being. That the cerebral circulation of blood depends upon important physical agencies wisely wrought is self-evident. And that normal cerebral function is likewise dependent upon the composite physical arrangements found in the human being cannot be controverted. It is not possible to understand and accurately diagnose certain cerebral disorders without a working knowledge of the anatomy and physiology of the intracranial circulation. A brief review, therefore, of the anatomical arrangements of the blood vessels, and a discussion of some of the peculiarities of the intracranial circulation will aid in the consideration of the important and increasingly frequent condition of *Cerebral Thrombosis.*

The arterial supply of the brain is through the right and left internal carotid arteries and the right and left vertebral arteries. The arterial and venous blood supply to the encephalon, for a better understanding, may be divided into (1) the meningeal vessels and their branches, (2) the superficial or cortical cerebral vessels and their branches, and (3) the central or deep branches.

As the names imply, the meningeal are distributed to the coverings of the brain. The superficial or cortical branches are distributed to the cortex or brain surface. The central or deep branches are distributed to the depths of the brain substance. The choroid artery and the ophthalmic artery, two important branches of the internal carotid artery are given off very soon after it enters the skull, and before it enters ino the formation of the circle of Willis. The vertebral arteries, right and left, give off several important branches just after entering the skull and before they unite to form the basilar artery.

The circle of Willis is formed by the right and left carotid arteries and the basilar artery. From the circle of Willis spring many important collateral branches destined to provide blood, at all times, to the cortical areas of the brain, the deep substance of the brain and the brain ganglia. The basilar artery and its branches supply the medulla, pons, cerebellum and the upper part of the spinal cord. The basilar artery and its branches are of great importance and have much of interest in connection with the study of our subject. From the circle of Willis, however, the principal arterial branches arise which supply the deep parts of the brain, the brain ganglia, and the cortical areas of the brain.

It is not intended to describe the vessels in any great detail or at length. I shall use the middle cerebral artery as a typical cerebral artery. Some of the peculiarities of the cerebral blood vessels, typically shown in this important vessel and illustrating the general arrangement of the cerebral arterial system may be noted.

We first observe that this vessel gives off, immediately after its formation, numerous small branches which enter into the central cerebral substance, and penetrate to the deeper portions of the brain and to the brain ganglia. In addition, this vessel gives rise to numerous cortical branches which supply certain definite areas of the brain cortex. It is well to have in mind a clear understanding of the two branches, thalamic and lenticulostriate arteries—the two branches most often affected by spontaneous cerebral hemorrhage. The striate artery is known as the artery of hemorrhage and supplies the internal capsule.

Numerous small arterial twigs are given off from the cortical branches, and small branches are given off from the pia mater, which penetrate the gray matter to enter and be distributed to the white matter, and deep into the brain substance. The central branches given off from the middle cerebral artery enter through the perforated space the base of the

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brain to be distributed to the depth of the brain substance and ganglia of the brain. Branches pass on up through the white matter towards the cortex and do not, in any case, escape to the surface or cortex.

It is of great importance to know that all of the arterial branches just described are terminal. By terminal vessels we understand that the vessel does not communicate or anastomose with any other vessel. No communication is found between the central branches which lie deep in the brain substance, that is, in the white matter, and the branches rising from the cortical arteries or the branches which penetrate from the cortex, the gray matter, and enter the white matter. Although these branches may lie close together, yet no communication is seen.

While intercommunication is seen at times between some of the cortical branches, yet such communication, according to Dr. John B. Deaver, is insufficient to provide nutrition to that part of the brain substance. The lymphatics enter the sub-arachnoid space. Therefore, blocking of any of the cerebral arterial vessels outside of or apart from the circle of Willis acts to deprive that area of the brain so affected of its blood supply. You can well understand that all of the arterial vessels and their branches outside of the circle of Willis are terminal and blocking of a terminal cerebral vessel will cause, in every case, the area in question to undergo softening. There can be no escape from this conclusion. Cerebral softening is a direct result of *Cerebral Thrombosis*. The area affected by a thrombus may be very small or very large. Our diagnostic ability may not make us aware of a small thrombus. Should the area affected be small, absorption of the softened part may occur, and healing take place by formation of scar tissue. We are not prepared to say that regeneration of brain tissue occurs. A cyst may form. The softened area may be walled off by delicate connective tissue, and liquefaction of the softened area takes place. Should the softened area become infected by the entrance of bacteria, an abscess will form.

A study of the venous circulation of the brain is most important in the consideration of our subject.

Sixteen sinuses in all convey the venous blood from the brain to the jugular foramen where it is taken up by the internal jugular vein. The veins and sinuses may, for convenience of study, be divided into the superficial and the deep groups. The veins from the meninges, pia, the brain surface, and brain substance, and from the deep portions of the orbit, the nasal fossae, the pterygo-maxillary fossae, the diploe and mastoid veins, enter the sinuses. All the veins enter the sinuses obliquely, and in the direction opposite to the flow of the blood in the sinus.

The cortical and deep cerebral veins conduct the blood in practically the same direction as the flow in the companion cerebral artery. This is explained by, and is on account of, the position of the superior and inferior sinuses. No intercommunication is found between the deep and the superficial cerebral veins. The pia mater is a delicate vascular membrane composed of small arterial and venous vessels passing to and into the cortical substance of the brain.

The superior longitudinal sinus commences at the crista galli, runs backward to about the mid-line, receiving as it passes along first the veins from the nares, then numerous veins from the brain cortex, and joins the right lateral sinus.

The inferior longitudinal sinus, smaller than the superior, receives the veins of Galen, passes backwards and enters the straight sinus, and thence on through to the right lateral sinus. The blood from the thalamic and striate arteries is returned through the veins of Galen. The veins of Galen receive the blood from the deep portions of the brain and brain ganglia and empty into the inferior longitudinal sinus.

The right and left occipital sinuses empty into the right and left lateral sinuses respectively. The right and left lateral sinuses, after receiving the occipital, the superior longitudinal and the straight sinus, pass forward and join the right and left superior petrosal sinuses. The lateral sinuses then turn downwards, receive blood from the mastoid and diploe and join with the inferior petrosal sinuses. The ophthalmic vein and the sinus alva parva form the cavernous sinus. The cavernous sinuses now divide into the superior and inferior petrosal sinuses. Through the transverse sinus, lying on the basilar process of the occipital bone, side communication is established between the inferior petrosal sinuses.

The superior petrosal sinus empties into the lateral sinus. The inferior petrosal sinus joins the lateral sinus to form the internal jugular vein near the foramen lacerum. The veins of the scalp, the mastoid veins, and the diploic veins, the meningeal veins, the nasal veins, the orbital veins, and the veins from the eye all enter the intracranial sinuses. The veins of the scalp and diploe intercommunicate at several places.

No provision is made for blocking of the superior and inferior longitudinal sinuses. No provision is made for blocking of the straight sinus. And what is of great importance, no provision is made for blocking of the veins of the brain and this is especially true of the veins of Galen.

In the superior anterior, superior middle, posterior and inferior posterior areas of the brain no provision is found for collateral venous circulation. Provision is made for collateral circulation in case of blocking of any one of the sinuses at the base of the brain.

The process of *Cerebral Thrombosis* may be very acute or very chronic in its manifestations. Apparently, it may develop very suddenly. The usual progress in development is gradual. The evidences may be well marked and clear cut in case of involvement of a large sinus. Septic manifestation may mask the evidences of the thrombosis. In case a small arterial twig is involved, the recognition of the condition is exceedingly difficult or impossible. The attending cerebral oedema and extending cerebral softening, constant concomitants, act to change the clinical picture from day to day. A cursory examination or study will fail to yield a clear understanding of the case. A comprehensive view and close observation is demanded in order properly to understand the condition. Clinical and pathological evidence fully bear out this conclusion.

I am of the opinion that an explanation will be found for many obscure mental conditions, changed and abnormal behaviors, altered personalities, arrest and perverted mental development, epilepsy, early senility and many otherwise unexplained sudden deaths by a thrombosis of an intracranial blood vessel. This may be the explanation of the deaths of newly born children, taking place at or near the time of birth and characterized by respiratory dysfunctioning, as in a case recently seen of a very young child left for a few moments alone by its mother and found dead on her return. A second case also illustrates the point. A young and apparently healthy student, after a mild attack of influenza, was seized by a severe convulsion, followed by profound coma, continued high temperature, without paralysis, marked respiratory dysfunctioning and death. Complete autopsy, tissue examination and guinea pig inoculation failed to reveal any causative specific disease. It was thought that arterial thrombosis of a small vessel near the respiratory center was the cause.

The pathology of *Cerebral Thrombosis* is mainly that of the causative disease. In an arteriosclerosis the characteristic changes in the blood vessel wall are found. The thrombus is not different from a thrombus occurring elsewhere, though often it is quite soft. The softening of the infract and oedema of the surrounding area of brain tissue is characteristic. A thrombus may form as a direct result of a diseased condition of the blood vessel wall. In this case a diseased condition of the inner coat of the vessel, the intima, is found. In that case the characteristic appearances of an endarteritis, which may be localized, are seen. It is very important to have this fact clearly in mind.

First and foremost, among the causes of *Cerebral Thrombosis* is anything which causes actual changes in the blood vessel walls, as: Endarteritis, endophlebitis, syphilis, infections, tumors, new growths, malignant growths, arteriosclerosis, boils, pimples, erysipelas of the face or scalp, carbuncles of the face, scalp, neck, and extension of inflammation and infection from adjacent parts, as in an otitis media, mastoiditis, orbital or nasal infections, sinusitis. A sympathetic ophthalmia may be explained by infection passing along the ophthalmic veins; extension from one vessel to another; injuries directly to the blood vessel wall; and the presence of foreign bodies.

In the beginning of an arteriosclerosis, the media is the site of the blood vessel wall changes. Extension of the changes to the intima or the endothelial lining of the vessel soon takes place and narrowing of the vessel lumen, and, at times, complete blocking of the vessel ensues. A thrombus formation is to be expected whenever there is an endarteritis. Any damage or disease of the endothelial layer of a blood vessel allows the blood platelets first, then the leucocytes, and then the blood

fibrin, to deposit at the site of the blood vessel wall changes and the vessel is either partially or completely blocked. Fragmentation of the thrombus may occur. Metastatic or septic symptoms may entirely mask the characteristic symptoms. In a large blood vessel the clot is usually laminated. Whenever it forms gradually, layer after layer is deposited. In a small vessel the clot forms quickly and without any laminations. The gradual formation of the clot explains some of the distinctive phenomena and symptoms of *Cerebral Thrombosis.*

In the discussion of the symptoms and signs of *Cerebral Thrombosis*, I shall refer to some case histories. This plan I believe will be more helpful than simply the enumeration of symptoms. The premonitory symptoms are numbness, tingling, disturbed sensation, amnesia and transient aphasia, though numbness, tingling, disturbed sensations are not characteristic.

Amnesia. C. H. P. left his home and place and wandered some miles away and when found was unaware of his whereabouts and identity. Careful examination disclosed that he was a syphilitic. Shortly afterwards he developed evidences of marked affection of memory, speech mechanism, emotions, and gradually failed in all his mental powers, became comatosed and died. The old description of cerebral softening best described the case.

Disturbances of speech mechanism. An old minister, a fluent, rapid, and clear speaker, developed recurring transient aphasia lasting about one day. The speech would return almost as suddenly as it was affected. Marked arteriosclerosis exists in this case.

Intermittent claudication is seen as a premonitory sign at times. Case of W. H. P., white, married, male, age sixty-six. Any walking would cause pain in the lower limbs. About three years later cerebral signs developed and progressed till mental and physical condition became helpless and death resulted in six weeks.

Mental gaps, forgetfulness, disorientation as to time and place, of short duration, visual disturbances are quite often observed as premonitory evidences. Transitory headaches, flashes before the eyes, temporary blindness and auditory noises may be associated with the foregoing symptoms. Premonitory symptoms always occur and may be overlooked or the history not obtained and yet the actual attack may be delayed for years. Mr. X., white, married, male, sixty-six year old, oral sepsis marked. Refused to have condition corrected. Developed loss of speech, memory failed rather rapidly and mental functioning changed to complete loss of all understanding and death. My impression is that of thrombosis of right middle cerebral artery.

The onset may be attended by *violent pain and headache* as in case of M. S. P. C., white, female, married, sixty-one years old. She was conscious, able to speak, could use all of members of body well, vomited and developed stiff neck, uncertain jerky movements. Note that the onset was at one P. M. and at six P. M. the speech became more and more affected, and a slow respiratory rate developed. The respiratory rate was seven per minute and remained about seven throughout the course of the disease. The pupils were about the size of a pin head and some oedema of the right optic nerve head was observed. The vision, speech and mentality were markedly affected. No paralysis of any muscle or groups of muscles was noted at any time. but progressive extension of the thrombus took place, and death followed three months later.

Mr. H., white, married, male, seventy-three years old, for a number of years had been a victim of advanced atheroma of all the vessels. He would wander away from his home and get lost. Gradual and increasing weakness of the entire right side of the body developed and later right hemiplegia with increasing speech difficulty, and complete aphasia. The gradual development of the symptoms and signs in this case precluded the diagnosis of a brain hemorrhage. My impression is one of gradual occlusion of the cerebral blood vessel.

C. H., white, single, male, forty-three years old, son of Mr. H., case just cited, was a victim of a high grade arteriosclerosis and showed evidences of the most marked oral sepsis the writer has ever seen. While attending to his father, the son complained of numbness and tingling of the right arm, followed by a slowly extending paralysis of the right upper extremity, then a slowly progressing paralysis of the right lower extremity, followed by speech disturbances which increased gradually to complete loss of speech. His memory and understanding were not affected. At no time was there any disturbance of or loss of con-

sciousness. To my mind this is one of the clearest cases of *Cerebral Thrombosis* I have ever seen.

Mr. O., white, married, male, forty-seven years old. After supper he observed tingling of the upper and lower extremities, and of the right side of the body. About one-half hour later was observed to be unable to move the arm and leg, and after about another half hour marked involvement of the speech was observed. He was not shocked and did not lose consciousness. Later on in the progress of the case, marked mental changes took place, confusion, delirium, and disorientation of time, place, memory of names, places, and people was noted. For example, he could look out of his room window and see plainly the house of his nearest neighbor and brother-in-law and yet he did not know the names of the people living there. Improvement commenced at the end of six weeks and continued for about one year. Today his mental and physical condition is normal to all appearances. It would take an excellent observation to detect any remaining affection of the mental or physical functions. My diagnosis in this case was a localized endarteritis. Later this opinion was confirmed by an eminent neurologist.

H. Y. E., white, male, widowed, eighty-two years old, was a victim of advanced arterial changes. A slowly progressing partial left side paralysis developed without loss of speech, consciousness or of sensation. This would seem to indicate a gradual arterial blocking, rather than an arterial rupture.

J. W., white, married, male, age sixty-six years, had marked dizziness followed by a progressive and extending paralysis, without loss of consciousnes and without speech involvement. Death followed later. It is my impression that a thrombus, rather than a rupture of the vessel, occurred.

J. A. C., white, male, married, age sixty-six years, was a victim of advanced arteriosclerosis, and advanced Bright's disease. Numerous retinal hemorrhages, exceedingly high blood pressure, low kidney functioning occurred. While at evening meal he lost the use of his right arm, later the right leg, and some hours later marked involvement of the speech, without loss of consciousness or sensation, appeared, gradual increasing severity of the phenomena followed during the following twenty-four hours and death took place on the third day following the onset. My impression is that extending clot rather than hemorrhage took place.

Jos. B. W., white, male, married, seventy-nine years old. This case complained several days of weakness, nausea, insomnia, nervousness, which was followed by marked mental confusion, delirium, excitement, incoherence and maniacal outbursts, changed behavior, loss of memory for things and people. Then rather rapid physical and especially mental deterioration developed without any paralysis. Death shortly thereafter indicated *Cerebral Thrombosis.*

H. W. H., white, female, married, age sixty-seven. In early life this case had a spinal paralysis of the paraplegic type. While taking tray to ill husband and, without warning, the tray was dropped and the patient fell in a heap on the floor. I reached the case a very few minutes later. There was no evidence of paralysis, yet there was a marked loss of the acuity of the mental faculties. Vision perception was very poor, and the blood pressure was 220. Improvement took place, but the mental functions of the patient did not clear up fully. An inability to read and write correctly was noted. These mental symptoms persisted with marked mental depression, and later a distrust for friends developed. My impression is thrombosis.

R. O. M. L., white, married, male, thirty-four years old, with an alcoholic history, was seized suddenly by a convulsion which lasted some forty-five minutes. When seen he was conscious and rational and no localizing sign no symptom was present. He was urged to enter the hospital for care and examination, but declined, saying, "I am not sick enough for that." The next morning, or about nine hours after the convulsion, unconsciousness was noted and from that time till death at four o'clock in the afternoon the progress of the case was steadily downwards. A spinal puncture was made, the fluid was under pressure and bloody. Routine examination disclosed the absence of pulmonary, heart and kidney diseases. The temperature rose rapidly and the respiratory rate became steadily less and less and, toward the end, long pauses of respiration were observed. A post-mortem done four hours after death showed a branch of the basilar artery ruptured. The spinal fluid Wassermann, the blood Wassermann, and patho-

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logical examination of the liver, pylorus, brain and blood vessels all revealed unmistakably syphilis. This case is sited to illustrate that involvement of the basilar artery is not attended by paralysis.

Quite a number of the insane show aphasia. It is necessary to have a physical basis for aphasia. My study of this important condition leads me to believe that a thrombus is the actual cause.

J. H. B., white, male, widowed, seventy-seven years old, a victim of high blood pressure and arteriosclerosis, for a number of years had had cerebral dysfunctioning. A well marked aphasia, with a hemianopsia developed. The aphasia cleared up, the visual disturbance improved somewhat. Yet, today, eight years after the attack, the vision at the outer side of the visual field is still reduced. Thrombosis seems to be the rational explanation of this case.

A clear distinction must be made in the rapidly developing, acute case with a large, soft clot, due to some acute infection, and the case in which the process is gradual. The progressive changes indicate that the blood vessel changes are the result of an advancing arteriosclerosis with a coexisting endarteritis.

In support of the views herein outlined, numerous cases may occur to you from your own experience.

Diagnosis. Premonitory symptoms occur as a rule. The usual premonitory symptoms are connected with sensation or with the mental processes. The symptoms and signs of the causative disease should be observed. The onset is gradual. The progress of the symptoms is gradual and may extend over some considerable time. Likewise, the signs develop gradually and, as a rule, some considerable time elapses before the evidences disclosed by the signs are sufficient to warrant an accurate diagnosis.

The history of later extension to and involvement of other functions, the constant tendency to mental changes, such as confusion, delirium, disorientation, gradual development of speech disorders, and mental and physical decay progressing steadily, from day to day, indicate *Cerebral Thrombosis*. The progressive mental and physical decay will prove the case later on in its course, if the diagnosis was not previously made. The temperature and pulse lines are often unaffected. Recall some striking example of hemiplegia in early life without mental decay or deterioration, and then recall a case of cerebral affection without hemiplegia or paralysis attended by a steady physical and mental decay. Pasteur is an example of the first condition and an example of the second condition was witnessed some few years ago in the case of one of our most gifted public citizens.

The explanation is that in cerebral hemorrhage the vessel involved is a small terminal vessel and one which supplies a very definite area of the brain. The effects of the hemorrhage remain, and the area of brain tissue involved is small, though structurally important. The adjacent part of the brain does not suffer for the reason that it is supplied with vessels which were not involved in the cerebral hemorrhage. The lenticulostriate and lenticulothalamic arteries are involved in more than 60 per cent of all cases of spontaneous cerebral hemorrhage. The area of the brain supplied by these small vessels is very small and is not directly connected with the blood supply of the parts of the brain which control the mental faculties.

Thrombosis affecting a vessel trunk or a large or principal branch gives rise to a disturbance of the functions of a wide area of the brain. The area so affected is greater than in spontaneous hemorrhage. In a thrombosis the process will extend, unless the seat of the clot is confined to a very small arterial twig.

In spontaneous hemorrhage of the brain hemiplegia is the rule, and the arm is affected more severely than the leg in the majority of cases. The onset is sudden, usually after a meal or after straining, or following excitement. Loss of consciousness, which may be brief, is the rule and is due to the rapid increase in the intra-cerebral pressure.

Spontaneous cerebral hemorrhages occur at all ages. They may occur in the first year of life. No age is exempt. The lenticulostriate supplying the internal capsule and the lenticulo-thalamic supplying the optic thalamus are the vessels most often affected. Cerebral hemorrhages may affect either side of the body. The onset in the occurrence of cerebral embolism is abrupt. Sudden shock always occurs quickly, and pallor and nausea are observed. Loss of consciousness is against the rule. The clinical picture is not complete for a variable

length of time. Thrombosis always occurs and adds to the already existing condition.

In cerebral hemorrhage the clinical picture is complete almost at once. A case is cited to illustrate this. The writer, while in conversation with T. D. R., observed difficulty of speech. In a moment the speech was lost, the side fell limp, and unconsciousness immediately developed.

The middle cerebral artery is affected in 75 per cent of the cases of cerebral embolism. The basilar artery is the next most frequently affected.

A prior exisiting causative disease may as a rule be found by careful examination in thrombosis.

In *Cerebral Thrombosis* the vessels affected (in order of frequency) are: the middle cerebral, the basilar and the anterior cerebral. Any cerebral vessel may be involved in a thrombosis. However, experience teaches that the lenticulostriate, lenticulo-optic and lenticulo-thalamic arteries are seldom involved in a thrombosis.

The veins involved in a *Cerebral Thrombosis* are many, although the most commonly affected are the veins of Galen. The sinuses most commonly involved in the thrombosis (in order of frequency) are: The lateral, cavernous and longitudinal. The reason for this is that these sinuses are more often exposed to trauma and infections.

Cerebral softening due to arterial thrombosis occurs most often in the corpora striata and optic thalamus; next in frequency in the pons and medulla. The pons and cerebellum are practically never affected by an embolus. The cerebellum is rarely affected in thrombosis.

The localizing signs depend, in all cases, upon the vessel involved. Mental changes, somnolence, loss of speech, dullness, apathy and absence of motor and sensory involvement indicate venous thrombosis of the deep cerebral veins or the veins of Galen.

In hemorrhage and thrombosis the blood pressure is as a rule high. In embolism the blood pressure is usually low. *Cerebral thrombosis* occurs rather frequently in the puerpural state, and in exhaustive hemorrhages, especially the hemorrhage of ectopic pregnancy.

Thrombosis of the sinuses occurs in the young from seventeen to twenty-six years of age. The septic symptoms of the coexisting and causative disease may mask the picture. The constructive diagnosis may be made in this condition by careful consideration of the causative condition,—for example, a mastoiditis showing cerebral symptoms and a flat jugular vein.

Many people are excellent candidates for *Cerebral Thrombosis*. The condition more often develops while the victim is asleep or is quietly going about the affairs of life.

It is much more common to have two or more recurrences in thrombosis than in cerebral embolism or hemorrhage. The explanation is simply that the thrombosing extends to another branch or twig of the affected vessel.

In arterial cerebral thrombosis, coma is more frequently absent. Thrombosis occurs usually in advanced life. Bulbar symptoms are much more common than in embolism or in a hemorrhage, on account of the fact that the basilar artery is frequently affected. The fully developed evidence shows that a wide area of the brain is involved. An area of the brain affected in a cerebral hemorrhage as wide as is affected in case of thrombosis would cause instant coma and death. The large size and wide distribution of the vessel that should be ruptured in order to produce so extensive an area of brain involvement is the explanation of this observation.

It is more important then to know the anatomical arrangement of the cerebral vessels in order to be able to interpret the signs and symptoms of the disturbed function of the several parts of the brain. It is commonly taught that some focal sign must exist before making a diagnosis of a brain disease. Often the symptoms and signs are not clear and the diagnosis is not written in plain bold type. A correct diagnosis may be exceedingly difficult, and at times altogether impossible.

Some essential factors may now be briefly mentioned in order that a correct understanding of the subject may be had.

A diseased or weakened media of the blood vessel wall is the essential or determining factor in a spontaneous cerebral hemorrhage. A damaged intima, that is a damage to the endothelial lining, is the essential or determining factor in a *Cerebral Thrombosis*. A diseased media is the cause of a hemorrhage. A diseased intima is the cause of a thrombosis. In the beginning of the process, the site of the

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change in the blood vessel wall is the determining factor.

Embolism is not dependent upon any local change in the blood vessel wall, as is always the case in spontaneous cerebral hemorrhage and thrombosis. Embolism is dependent upon fragmentation from other sources. Softening occurs in all cases of thrombosis, and any infection of the clot adds greatly to the gravity of the condition.

Epilepsy arising after twenty years of age has been classed always as syphilitic. This is true. It is equally true that syphilis is a potent and frequent cause of blood vessel changes. Here perhaps may be found an explanation of epilepsy, that is, blood vessel wall changes giving rise to thrombosing of minute arterial twigs. I would suggest as a problem for the investigator the study of *Cerebral Thrombosis* of the smaller vessels as a cause of epilepsy and of sudden deaths.

In all cases where evidence exists leading one to consider some brain involvement, of whatever nature, the fundamental and imperative need is to determine the cause.

Alcohol, drugs, and trauma must be excluded before making a final diagnosis. Uraemia and diabetes must be eliminated by examination of the urine and blood estimation in every case. A complete physical examination including all laboratory findings is required to disclose the presence or absence of other diseases—particularly any of the causative conditions.

Summary

In acute spontaneous cerebral hemorrhage, the clinical picture is developed in a few moments. In cerebral embolism the onset is always sudden without any premonitory warnings. Shock is seen, and gradual and progressive manifestation of the process occurs. In thrombosis, premonitory symptoms are always present; the onset is not abrupt and the progress of the case shows gradual, increasing mental and physical impairment.

Prognosis

The particular cerebral blood vessels affected in the process must be constantly borne in mind. It is often a sad duty to give an unfavorable outlook and to predict rapid and certain physical and mental decay. A medical man who ventures opinions without careful study and consideration of the case will invariably be mortified and embarrassed. Generally speaking, in cases of *Cerebral Thrombosis* the outlook, not only as to life but also as to physical and mental usefulness, is most unfavorable.

Should a thrombus form as a result of an endarteritis, or inflammation confined to the intima, then it is possible and probable that correct treatment will effect a gradual absorption of the clot and restoration. Should the thrombus form as a result of a gradual occlusion of the vessel, as occurs in arteriosclerosis, no improvement will take place. Syphilitic invasion of the blood vessel wall in some cases may be improved by vigorous treatment.

Treatment

(1) Largely preventive. That is, save the patient from thrombosis by preventing or removing the cause.

(2) In those known to be candidates for this malady, diet, proper rest, sleep, gentle exercise, attention to all the body functions, and the use of alkalies and iodides is all one can do.

(3) In the treatment of cases after thrombosis has taken place, add to the foregoing supportive measures directed especially to the circulation.

(4) Operative interference is only possible in sinus involvement and then in a most limited way. I have dealt with sinus conditions affecting the superior longitudinal sinus in two cases, and in the lateral sinus in three cases only. In two cases of brain abscess containing about 20 c.c. of pus in each case—satisfactory outcome was obtained. In the first case the abscess resulted from a lateral sinus involvement and in the second case from a gunshot wound involvement of the superior longitudinal sinus. At this writing, it is not thought that surgery can afford any relief in embolism and in thrombosis affecting the arterial vessels of the brain. The one great thing in all these cases is prevention. How may it be brought about? The answer is to prevent or arrest the causative disease.

When a bit of sunshine hits ye,
After passing of a cloud,
When a fit of laughter gits ye
And y'er spine is feeling proud,
Don't forget to up and fling it,
At a soul that's feeling blue,
For the minit that ye sling it,
It's a boomerang to you.
—*Selected.*

INJURIES OF THE CARPAL BONES OF THE WRIST—REPORT OF CASE OF DISLOCATION OF THE SEMILUNAR BONE AND FRACTURE OF THE SCAPHOID BONE AND ULNAR STYLOID.*

By RANDOLPH L. ANDERSON, B. S., M. D., Richmond, Va.

The wrist-joint proper is formed by the articulation of the radius with the carpal scaphoid, semilunar and cuneiform bones. The remaining bone of the proximal row of the carpal bones is the pisiform, a sesamoid bone. The distal row is made up, beginning with the radial side, of the trapezium, trapezoid, os magnum and unciform. So there are eight carpal bones.

Todd says the carpal bones must function as buffers to distribute and dissipate the effects of the forces transmitted upward from the hand to the forearm. The number and size of these bones and the multiple joints involved probably save these bones from more frequent injury.

Fig. 1. A and B—Pre-operative lateral and antero-posterior views of the wrist.

There have been eight cases of carpal bone injury at the Memorial and St. Philip Hospitals in the past three years. Speed reports the occurrence of one fracture of the scaphoid for every eight fractures of the radius. Bizarro reports one hundred and twenty-three carpal

*Presented before the Richmond Academy of Medicine.

injuries in which fracture of the scaphoid was most frequent and dislocation of the semilunar was next. The combination of the two injuries is not common, but is not rare.

Most of the carpal injuries result from falls on the out-stretched hand. In such cases, in order of frequency comes first, fracture of the radius; second, fracture of the scaphoid bone; and, third, dislocation of the semilunar bone.

An absolute diagnosis is almost impossible without an X-ray. With further use of the X-ray, many so-called sprains of the wrist have been found to be fractures or dislocations. In questionable cases, both wrists should be rayed. At least, two views should be obtained. It is necessary to distinguish between fractures and developmental changes, such as bipartite scaphoid, described by Faulkner and others.

I shall not dwell on the treatment of carpal injuries other than to say that any treatment should be prompt, be it closed reduction, open operation or excision of the bones. Early treatment is attended usually with good results. Unrecognized cases give 25 to 75 per cent of disability, with considerable pain as a permanent feature in untreated cases.

Our patient, E. M., a male student of nineteen years, had previously sustained a contusion of the left thigh which necessitated crutches. While coming down stairs he fell forward about fifteen feet, landing on his outtretched hand. The left wrist became very painful and the patient was brought to the office immediately.

He showed considerable swelling of both the dorsal and palmar surfaces of the left wrist, beginning with the lower two inches of the radius and extending downward to the fingers. On the dorsal surface a depression was seen just distal to the lower radius and midway laterally. There was a corresponding bulge anteriorly under the flexor tendons. The hand was held stiffly with the wrist slightly dorsiflexed and the fingers flexed moderately. The bulge described anteriorly beneath the flexor tendons was exquisitely tender. Tenderness was marked on the dorsal surface just below the radial styloid over the scaphoid and pressure over the anatomical snuff-box also elicited expressions of pain. The ulnar styloid was likewise sensitive. All active and passive motions of the wrist joint were limited and painful. Attempts at dorsiflexion and ulnar flexion were especially restricted. Attempts to flex or extend the fingers were painful.

X-rays were made. Report by Drs. Talley and Whitehead follows: "The semilunar bone is displaced slightly forward though not completely out of the joint cavity. The remainder of the carpal bones as well as those of the hand are displaced backward on the semilunar, the plane of the metacarpus being posterior to the joint. There is a fracture of the scaphoid bone with slight displacement of the fragments. There is a slight fracture of the tip of the styloid process of the ulna."

We thought that an open operation would be preferable to an attempt at a closed reduction, because of the extreme trauma frequently necessary for reduction by closed or manipulative methods. It was thought that the semilunar bone would probably have to be removed. A Walker splint was applied temporarily, and sedatives prescribed making the patient fairly comfortable.

Four days later, December 3, 1929, the patient was operated on at Johnston-Willis Hospital. A two inch incision was made anteriorly just at the inner side of the tendon of the brachio radialis. The radial artery and nerve and superficial flexors were retracted to the ulnar side and the pronator quadratus exposed. The anterior radio carpal ligament was then incised, exposing the proximal row of carpals. The semilunar was felt anteriorly beneath the flexor tendons. An attempt was made to free the ligamentous attachment between the scaphoid and the semilunar. The proximal or ulnar portion of the fractured scaphoid came into view. This was partially rotated and at the time became confused with the semilunar. The error was discovered and this fragment was easily manipulated back into its proper position with the distal fragment of the scaphoid by blunt dissection. In this maneuver, soft ligamentous tissues interposed between the two scaphoid fragments were displaced. Attention was again directed toward the semilunar. To our surprise, the semilunar was no longer displaced anteriorly. The wrist was turned over and while pressure was kept on the semilunar anteriorly, the wrist was sharply flexed and reduction of the distal row of the carpals on the semilunar was completed. The wound was sutured in layers and dressed. A plaster cast was applied from the palm to

the elbow with the thumb held in abduction by the plaster and the wrist slightly flexed.

Post-operative X-ray report by Drs. Talley and Whitehead follows: "The bones of the wrist appear to be in proper relation to one another as are likewise the fragments of the scaphoid. It may be said that the dislocation previously present appears to have been satisfactorily reduced and the position of the fractured scaphoid now appears better than before."

range of motion of from twenty-five degrees of dorsiflexion to forty degrees flexion. Radial and ulnar deviation is only slightly restricted. Motion of the fingers is entirely free. There is no pain in the wrist.

My only concern at the present time is whether or not the scaphoid will unite properly. I reported this case to emphasize the importance of X-ray examination in all wrist injuries and to bring out the importance of early treatment in these cases.

Fig. 2. A and B—Post-operative lateral and antero-posterior views of the wrist.

Convalescence was uneventful. The original cast was kept in place for four and one-half weeks. At this time, it was removed, baking and massage was begun and the wrist changed from slight flexion to slight extension in a plaster cast. The thumb was freed. Motion of the fingers was encouraged. Gradually, extension of the wrist was increased in the splint which has been kept on for six weeks and is now to be discarded. The wrist has a

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307 *Professional Building.*

EPIDURAL SACRAL AND PARASACRAL ANESTHESIA IN SURGERY OF THE PERINEUM.*

By JAMES WARREN SAYRE, M. D., Newport News, Va.

This report concerns fifty-four (54) consecutive cases of epidural sacral and parasacral anesthesia in perineal operations at the Jefferson Hospital, Roanoke, Va., from June 1, 1927, to July 1, 1928. The series includes:

14. Suprapubic prostatectomies.
1 Perineal drainage of prostatic abscess.
1 Resection of vesical diverticulum.
1 Resection of vesical diverticulum with left ureteral transplantation.
1 Closure of recto-vesical fistula.
1 Perineorrhaphy.
1 Electrocoagulation of urethral caruncle.
4 Drainages of ischio-rectal abscesses.
30 Hemorrhoidectomies of the Whitehead type.

My purpose in this report is to review the anatomical considerations, the technique of injection, and to comment upon the successes and failures, advantages and disadvantages, the reactions, and methods of controlling them.

History

In 1901 and 1903 Cathelin proposed the use of normal saline injections into the sacral canal for the purpose of allaying certain nervous manifestations connected with the urinary tract. He also experimented on dogs, injecting 3 c.c. of a 1 per cent solution of cocaine into the sacral canal, and obtained anesthesia of the whole body. His attempts to produce anesthesia in man by this method failed, but the direct result of Cathelin's publication in 1903 was the introduction into France of the epidural method of medicating the nerves of the sacral canal in certain chronic conditions, such as sciatica, neuralgia, lumbago, tabes dorsalis, sexual neurosis, and enuresis. It was not, however, until 1910 that material success was reported in this regard by Laewen who was able to perform painlessly the more common operations on the rectum, perineum and female genitalia. He called the method "extradural anesthesia."

Technique and Anatomical Considerations

Thirty minutes before coming to the operating room the patient is given a hypodermic of 1/6 grain of morphine, and, upon arriving there, is placed upon the operating table in prone position with a cushion under the hips; this elevates the buttocks, partially flexes the thighs, and serves to accentuate the bony landmarks. The cutaneous area over the sacrum and around the buttocks is sterilized with iodine and alcohol, and in this series there were no infections at the local site of injection.

The laminae of the first four sacral vertebrae unite to form the four sacral spinous processes. The laminae of the fifth sacral vertebra do not unite and can be palpated as tuberosities on either side just lateral to the midline. These are known as the sacral cornua. The resulting bony defect is covered by a dense fibrous membrane and is termed the "sacral hiatus." With the index finger of the left hand the tip of the coccyx is palpated in the anal groove. The finger then follows the posterior surface of the coccyx upward until the sacral cornua are felt on either side. Somewhat higher in the median line the finger identifies the fourth sacral spinous process, indicating the apex of the triangle guarding the entrance to the canal. With a hypodermic needle a dermal wheal is raised over the center of this triangle and the subcutaneous tissues are infiltrated so that the passage of the large needle will not cause pain. A spinal puncture needle is then introduced through the skin with the bevel upward and at an angle of about forty degrees with the skin surface. There is a sensation of increased resistance when the needle encounters the sacrococcygeal ligament and when this is perforated the point of the needle impinges upon the bone of the anterior wall of the sacrum. The needle is then withdrawn one to two millimeters and the hilt depressed until it becomes approximately parallel to the sacral canal. It is then advanced gently and slowly about three cms. into the canal. In the event that the patient is so obese that the bony landmarks cannot be palpated the operator is left to master the situation only by his past experience. When, however, the needle is felt to penetrate a dense membrane, pass through a free space, and then encounter bone, these are reliable signs that the canal has been entered. The stylet is then withdrawn, leaving the needle in place, and a syringe is attached for aspiration; if blood or spinal fluid escapes, the needle is withdrawn until the flow ceases. After a few minutes the injection is slowly made, the needle being gradually withdrawn as the piston advances. If the solution is in-

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Newport News, Va., December 3-5, 1929.

jected over the posterior surface of the sacrum, there should be tumefaction or at least back pressure against the advancing piston. The spinal canal was entered and spinal fluid aspirated once in this series. The needle was withdrawn and after a few minutes the routine injection made and no reaction followed. The routine injection into the canal consisted of 25 c.c. of freshly prepared 2 per cent procaine hydrochloride in normal saline containing 5 minims of epinephrin hydrochloride (1:1000).

The crest of the ilium is then palpated and followed posteriorly until the posterior superior spine is located. A dermal wheal is raised about 1.5 cms. inward and about a centimeter downward and this point should lie over the second sacral foramen. Another wheal is raised just below and lateral to the cornua which locates the fifth foramen. The distance between these foramina is divided into three equal parts by two dermal wheals which mark the position of the third and fourth foramina. To 40 c.c. of freshly prepared 1 per cent procaine hydrochloride in normal saline 5 minims of epinephrin hydrochloride (1:1000) are added. Of this solution the greatest amount (6 c.c.) are injected into the second sacral foramen and the quantity of each successive foramen reduced by 1 c.c., that is, 6, 5, 4, and 3 cubic centimeters respectively. The first foramen lies deepest of all and prolonged search is often necessary for its location. Satisfactory anesthesia may be obtained without injecting it and for these reasons it was not attempted in this series.

The anesthetized area includes the anus, perineum, urethra, neck of the bladder, posterior surface of the scrotum, and a variable area on the inner surfaces of the thighs. The injection of the foramina merely augments the effect of the anesthesia of this area. It is time-consuming, uncomfortable and annoying to the patient, requiring nine needle punctures instead of one, and, besides, in the majority of cases is unnecessary.

Perineal prostatectomies have been performed in the Brady Urological Institute, Baltimore, since 1924, under a single extradural injection of 20 c.c. of 3 per cent procaine hydrochloride, and they have reported splendid results from this method. Writing from that clinic in the *Journal of Urology*, March, 1926, Dr. E. Clay Shaw showed by experiments on the cadaver as well as by a careful study of the clinical cases that a single extradural injection of 20 c.c. of 3 per cent procaine hydrochloride gave the best results and that the incidence of reactions was not as high. The experiments on the cadaver showed that 20 c.c. fill the sacral canal, and any excess to this amount passes upward to the lumbar region of the vertebral canal.

For a concise description and diagrammatic illustrations of the technique of injection, I should refer you to Labat's Regional Anesthesia, a publication of Saunders, Philadelphia.

Comments

In the fourteen cases of suprapubic prostatectomy the caudal anesthesia was combined with local anesthesia of the abdominal and anterior bladder walls. In none of these cases was it ever necessary to supplement the caudal by inhalation anesthesia. We were particularly interested in finding the marked degree of relaxation of the prostatic area which permitted the operator, except in the obese, to work comfortably with the prostatic fossa directly in view. This is an asset that I feel would justify the injection even if anesthesia were not obtained. There is far less bleeding under caudal anesthesia and, when it occurs, it can be controlled under direct vision so successfully that the Pilcher bag is often unnecessary. The freedom from bleeding has been explained on the basis of a temporary sympathetic paralysis with subsequent splanchnic vascular dilatation and a fall in blood pressure. The majority of the prostatic cases complained of a drawing, tugging sensation during the actual enucleation of the gland by blunt dissection. This was not complained of in the absence of traction while cutting or suturing.

The two cases in which the vesical diverticula were resected required considerable traction and manipulation of tissues; the case in which resection was accompanied by a left ureteral transplant was time-consuming, requiring approximately two hours, yet the anesthesia appeared as satisfactory at the end as at the beginning of the operation.

The thirty (30) cases of hemorrhoidectomy were of the Whitehead type. This method is especially applicable to the use of the cautery where ethylene, for example, cannot be employed with safety. The comfort with which these operations were performed was greatly

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facilitated by freedom from bleeding and marked relaxation of the anal sphincter, the operator in the majority of cases being able to introduce three fingers into the rectum without difficulty,—a relaxation that cannot be safely obtained with any of the inhalation anesthetics. I consider the relaxation of the anal sphincter the most reliable single test for the determination of anesthesia after the extradural injection. When the effect of the procaine began to die out, I believe it required more morphine to keep these patients comfortable than was required for those operated upon under inhalation anesthesia. In like manner, I believe that post-operative catheterization was more often necessary in these cases than in those to whom gas anesthesia was administered. In dealing with an obese, apprehensive, un-cooperative patient of this group, I met with my only complete failure of the series, meaning by this the necessity of a general anesthetic. The explanation of this failure, I am sure, was faulty technique, not being able to enter the canal.

There were no deaths in the series that could in any way be attributed to the anesthesia. Serious reactions did not occur in any of the fifty-four cases and no reactions at all occurred in approximately 50 per cent of that number. In the other 50 per cent the patients felt weak, apprehensive and sometimes nauseated. In a few cases there was pallor, perspiring of the forehead, a retarded response to questions, a slowing of the pulse, and a fall in blood pressure, sometimes as much as 25 mms. Four patients of the series vomited. The explanation of this picture is the paralytic action of the procaine on the sympathetics when it extends beyond the sacral canal. The most delicate reactions are best detected by frequent blood pressure readings. The reactions are controllable by epinephrin hydrochloride, 5 to 10 minims (1:1000), but in this series it was not used after the original injection.

The epidural method is time-consuming, attended by reactions, somewhat difficult in the obese, and, in nervous, apprehensive, un-cooperative patients who prefer inhalation anesthesia, I believe it should not be attempted.

On the other hand, epidural anesthesia has many advantages. During the operation the bleeding is far less and the musculature of the anesthetized area is markedly relaxed, greatly facilitating the exposure and manipulation of tissues. The incidence of post-operative pneumonia is practically nil. There is little or no shock, and nausea and vomiting, seen so frequently after inhalation anesthesia, are rare. The patients can drink water in abundance immediately after the operation and resume a full diet on the following day.

I must take this opportunity to express my appreciation to Dr. Hugh H. Trout, Roanoke, Va., for the privilege of reporting these cases. In this series, he was the operator; I was only the anesthetist. He has employed the use of extradural anesthesia in similar cases since 1923 and has been favorably impressed with its advantages. Within the past few months he has partially abandoned its use because of the pleasant results obtained with spinal. In the prostatectomy cases it saves the trouble of local infiltration of the abdominal wall, and in the hemorrhoid cases the post-operative pain is less with spinal than with sacral anesthesia.

On the other hand, prior to 1924, Dr. Young abandoned the use of spinal for caudal anesthesia in the Brady Clinic because he felt the spinal was fraught with a certain amount of danger, the region anesthetized seemed so much more extensive than was necessary, and the severe reactions, although infrequent, he considered dangerous and difficult to counteract.

Despite the present revolution in newer methods of anesthesia, I believe caudal anesthesia still holds a place in surgery of the perineum.

Conclusions

This series is far too small from which to draw general conclusions. However, these observations and the experiences of others lead us to believe that:

1. In the hands of the careful operator the method is safe and effective. The explanation of failure is almost always "errors in technique."

2. It is especially valuable in the aged with hypertension, myocardial disease, renal impairment, or respiratory infections.

3. There is less bleeding and more relaxation than can be safely obtained with inhalation anesthesia.

4. The ability of the patient to drink water freely immediately after operation and resume a full diet on the following day are distinct advantages of this method of anesthesia.

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EUGENIC STERILIZATION.*

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THE LAW

Eugenic sterilization has occasioned much discussion in the past twenty-five years. Indiana was the first State to legalize sterilization of the mentally unfit; the law was adopted March 9, 1907. Since that time about one-half of the States in the Union have passed some type of sterilization law. Virginia was the nineteenth State to take this step, the law being approved March 20, 1924, and is found in Chapter 394, Acts of 1924. The constitutionality of the Virginia Law has been upheld by the United States Supreme Court, through a decision written by Justice Holmes and delivered May 2, 1927. Justice Butler alone failed to concur in this decision and he wrote no report of his reason for dissenting.

As the Virginia Law now stands, any inmate of a State Institution for the insane, feebleminded or epileptics, who is afflicted with hereditary recurrent insanity, idiocy, imbecility, feeble-mindednes or epilepsy, and who, if sterilized, could be paroled or discharged and become self-supporting, can be sterilized by the operation of vasectomy in the male, and salpingectomy in the female.

The present procedure is as follows: The Superintendent of the institution applies to the Court for the appointment of a suitable person to act as guardian or committee for the patient. The Superintendent then prepares a petition, directed to the Special Board of Directors of the hospital, stating the facts in the case and the grounds for his opinion why the patient should be sterilized. A copy of this petition, together with a notice in writing, designating the time and place of the hearing, not less than thirty days before the presentation of the petition to the Board, is served upon the patient, and if the patient be a minor, having a living parent or parents, whose names and addresses are known to the Superintendent, the petition and notice are likewise served upon them, and a copy of the petition and notice is also served upon the guardian or committee. After the petition and notice have been served as above set forth, the Special Board at the time and place named therein proceeds to hear and consider the petition and the evidence offered in support of,

*From the records of the Eastern State Hospital.

or against same; having the patient and his guardian present at the hearing. If in the opinion of the Board the operation should be performed, it orders the Superintendent to perform, or have performed by some competent surgeon the operation of vasectomy, if the patient be a male, or salpingectomy, if the patient be a female.

After the Special Board has ordered the sterilization, it is not performed for a least thirty days, so that the patient or his guardian may appeal to the Circuit Court as provided by the Act.

There is no voluntary procedure provided and the compulsory procedure involves much red tape, is cumbersome and takes not less than sixty, and frequently nearer ninety days, before consummation, depending upon the date of the meeting of the Special Board of Directors of the Hospital. A number of patients have come in just for the purpose of being sterilized, and a voluntary clause in the law, allowing prompt action in these cases, would be a great saving in time and money to the State. The medical profession can do much towards having such a clause incorporated in the law.

Selection of Cases

Great care is taken in the selection of cases to be sterilized, as we recognize that the benefits of this procedure have not yet been conclusively proven, and that depriving an individual of all prospects of parenthood is a grave undertaking and should not be done without due and careful deliberation.

We first study the patient for a long enough period to make sure that the mental condition falls within the limitations of the statute. Then providing that the patient's physical condition is good, that she is of the child-bearing age, and is the type of case which if sterilized could be paroled, what is proposed is explained to her. When the patient understands that the ovaries are not removed, the operation concerning itself solely with the tubes, and that there is no loss of sex desire or power, the only result being the prevention of conception, and that she will probably be able to leave the hospital, she is usually not only willing, but anxious to have the operation performed. The type and result of the operation is also explained to the family of the patient, which usually heartily concurs.

The majority of our patients operated on to date have been girls of the mental defective anti-social group, the so-called moral imbeciles. The youngest patient sterilized was fifteen; the oldest forty; the average age twenty-five and eight-tenths years.

Methods of Female Sterilization

There are many methods of sterilization to be found described in the literature. The X-ray provides temporary sterilization, but this is uncertain and variable. There is a method of intra-uterine cauterization of the uterine ends of the fallopian tubes and, more recently, the experimental work of Jarcho, whereby injections of guinea pig and sheep spermatoza into rabbits has produced temporary sterility, is of interest and may be of practical value in the future.

For our purpose, surgical treatment of the tubes seems more satisfactory. There are many methods described, among them: simply crushing and ligating the tubes; severance of the tubes, with implantation of the cut ends in the broad ligament; severance of tubes, burying the distal ends in the broad ligament, and purse stringing and inverting the cornual end; resection of the proximal inch of the tubes, burying the distal end in the broad ligament and wedging the cornua before sewing it over. The method used at the Eastern State Hospital is that of wedging the cornua, ligation of the proximal end of the tubes and suturing them to the fundus with closure of the wedge in the cornua. We use this method because we believe it to be certainly as effective as any of the above enumerated techniques, because it can be done quickly and because it seems to offer an additional support to the uterus, rather than allowing a certain amount of relaxation as do some of the other methods.

Objection has been raised to wedging the cornua on the grounds that it endangers the ovarian blood supply. In our small series, there has not been a single case of post-operative menstrual irregularity. It is our practice to correct any pelvic pathology which may be present, and we routinely remove the appendix. In our series of forty-two sterilizations, thirty-five appendectomies were done, many of which were definitely diseased and symptom-giving.

There have been no post-operative complications of any kind, no infections or draining wounds, although one patient, sterilized incidentally to an operation for acute appendicitis, was so disturbed that it was necessary

to keep her restrained most of the time for three weeks after the operation to prevent her tearing her dressings off and clawing at the incision.

Results

Twenty-six of the patients sterilized have since left the hospital. Our information is that twenty-one of these are getting along well. One of the five who cannot be counted as doing well is a feeble-minded girl, who has been detained in Kentucky for anti-social conduct. The other four have been returned to the hospital because of mental upsets, but will unquestionably go out again in the near future.

Of the sixteen sterilized cases who have not left the hospital, one is just a week post-operative, but will leave soon. Eight of them have not recovered sufficiently from a mental standpoint to be discharged. The remaining seven could leave if there were some responsible person to supervise their conduct on the outside,

In Conclusion

Eugenic sterilization seems a rational and safe method of lowering the percentage of the mentally incompetent in future generations. It offers freedom and economic productiveness to many individuals now under custodial care. While a great stride forward has been taken by the adoption of the present Virginia law, there is still much room for its improvement and the medical profession can render valuable service toward having this law amended.

VENEREAL DISEASE PREVALENCE IN VIRGINIA.*

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and
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Virginia has one hundred counties included in its 440 mile southern length and 200 mile breadth, eighteen of which have been selected as representative of the State in the present survey of venereal diseases. These counties are in five groups, the west, the south and the north central groups having a sparse population, while the eastern groups including the counties in which are located the city of Richmond and the three principal seaports of Virginia are relatively thickly populated. The total population of the State is 2,575,000. These eighteen counties have 1,198,678 or 47 per cent of the total population.

*Statistical analysis, tables and graphs by Miss Usilton; field work on questionnaires by Mr. Riley.

Scope, Purpose and Method

The purpose, reliability and method of the surveys have been discussed in detail in the previous papers of this series of prevalence studies. In brief the purpose of the study is to determine the number of cases of gonorrhea and syphilis under treatment or observation in the United States by private practitioners and public clinics, hospitals or other institutions engaged in the treatment of venereal disease as of a selected date. Among the factors affecting the completeness and accuracy of the data are, the cooperation of those executing the questionnaires, the accessibility of free treatment, the number of unrecognized cases, and the lack of follow-up of individual patients, as discussed in the prevalence study of fourteen communities in *Venereal Disease Information*, Volume IX, Number 2, February, 1928. Each of these factors tends to lower the prevalence rate rather than to inflate it so that we may assume that the prevalence rates determined by this series of studies represent the minimum rates. The work has been accomplished by means of questionnaires sent to physicians and clinics in the representative communities selected for survey. In the present survey the questionnaires were returned with the statement of the number of cases of venereal disease under treatment or observation on July 26, 1928.

Source of Report

Table No. I indicates that 50 per cent of the physicians and public clinics had one or more cases under treatment. Of the 8,475 total cases reported under treatment in the counties of Virginia surveyed, 79 per cent were being treated by physicians, less than 1 per cent by other private practitioners and 21 per cent by public clinics..

Prevalence Rates

The case rates for gonorrhea are two and a half times greater for the male than for the female. The syphilis rate for male is only one and a half times greater than for the female. It will be noted from Table No. II and Figure No. 1 that the case rate for the white and colored races for gonorrheal and syphilitic infections are quite different. The rates among the white population are 3.23

Table No. I.

Source of Reports on the Number of Cases of Syphilis and Gonorrhea Under Treatment or Observation on July 26, 1928, From the Eighteen Counties of Virginia Surveyed

Source	Number Reports	Reporting No Cases	Number Reporting One or More Cases	Percentage of Each Source Re-Reporting One or More Cases	Number of Cases	Percentage of Cases Reported By Each Source
Total	1159	564	595	51.3	8475	100.0
Physicians	1059	497	562	53.1	6684	78.9
Other private practitioners	42	38	4	9.5	10	.1
Public clinics—voluntary attendance	58	29	29	50.0	1781	21.0

for gonorrhea and 2.95 for syphilis whereas for the colored the gonorrhea is less than one-half that for syphilis, the rates for the colored population being 2.86 for gonorrhea and 6.02 for syphilis. As has already been pointed out these rates represent patients constantly under medical care and therefore do not reveal the true prevalance of venereal diseases. The fact that the rate for the cases under treatment for gonorrhea is lower among the colored than the white race while the rate for syphilis is so much higher probably indicates that the colored population suffers less severely from a gonorrheal infection than does the white patient.

Table No. II.

Prevalence of Gonorrhea and Syphilis by Sex and Color of Patient With Estimated Population as of July 1, 1928, in the Eighteen Counties of Virginia Surveyed

	White and Colored			White			Colored		
Cases reported under treatment by physicians and public clinics	Total	Male	Female	Total	Male	Female	Total	Male	Female
Gonorrhea and syphilis	8475	5756	2719	4961	3573	1388	3514	2183	1331
Gonorrhea	3722	2747	975	2591	1960	631	1131	787	344
Syphilis	4753	3009	1744	2370	1613	757	2383	1396	987
Case rate per 1,000 Gonorrhea and Syphilis	7.07	9.05	4.84	6.18	8.34	3.71	8.88	10.51	7.07
Gonorrhea	3.11	4.32	1.73	3.23	4.57	1.69	2.86	3.79	1.83
Syphilis	3.97	4.73	3.10	2.95	3.76	2.02	6.02	6.72	5.25
Estimated population, July 1, 1928	1,198,678	636,327	562,351	802,848	428,637	374,211	395,830	207,690	188,140

Distribution of Physicians

In Table No. III we have the distribution of physicians by the number of cases of venereal disease under their care. This tabulation revealed that practically all the physicians who were treating an appreciable number of cases of venereal disease had cases of both gonorrhea and syphilis under treatment. Since 79 per cent of the total cases of venereal disease included in the study are in the hands of private physicians, it is encouraging to find that 92 per cent of these cases are in the hands of 31 per cent of the physicians. Through the active participation of these physicians in control efforts with health authorities much can be accomplished toward decreasing the prevalence of the disease.

Percentage Distribution of Private Practice and Public Clinic Cases

In Table No. IV we have the percentage of cases under treatment in private practice as compared with those in public clinics. These data are by sex and color of the patient. Although private practice cases are very well distributed the acute cases of gonorrhea and the

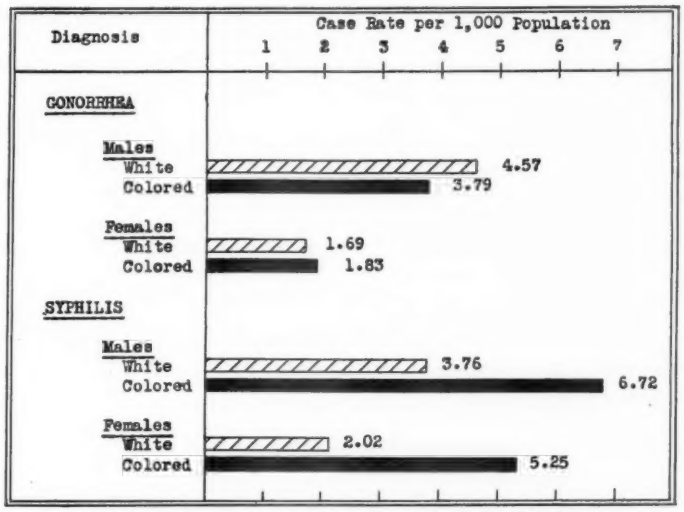

Fig. 1.—Prevalence of gonorrhea and syphilis among the white and colored population of eighteen surveyed counties of Virginia.

late cases of syphilis make up a slightly higher percentage of the total cases of venereal disease under treatment. The public clinic cases are overwhelmingly late syphilis. Proportionately three times as high a percentage of the colored patients are treated in the public clinics as is true of the white ones. In fact among the colored females, 40 per cent are treated in the public clinics as compared with 17 per cent of the white females, and there is a smaller percentage of the white males treated in public clinics than any other group of patients. There are approximately twice as high a percentage of the white females in public clinics as white males.

Prevalence Rates by Counties and Cities

The extent of the prevalence of venereal diseases in each county based on those cases that were reported under medical care in the territory surveyed is depicted in Map A of Figure 2 and Table V. The medical centers are shown in their county of location. It will be noted that in each instance the case rate for venereal disease per 1,000 population in those counties in which the treatment cen-

Table No. III.

Distribution of Physicians by Number of Cases of Gonorrhea and Syphilis Reported Under Treatment, Showing Physicians Having Under Treatment Cases of Gonorrhea Only, of Syphilis Only, and Those Having Cases of Both on Date of Survey

Number of Cases Under Treatment	Distribution of Physicians By Cases Reported		Physicians Having Under Treatment:						Total Cases of Venereal Disease Reported Under Treatment	
			Gonorrhea Only		Syphilis only		Gono. and Syph.			
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Total	1059	100.0	83	100.0	104	100.0	375	100.0	6684	100.0
1 to 4	232	21.9	73	88.0	83	79.8	76	20.3	540	8.1
5 to 9	149	14.1	8	9.6	16	15.4	125	33.3	1001	15.0
10 to 14	60	5.7	1	1.2	.....	.....	59	15.7	676	10.1
15 to 19	35	3.3	1	1.2	3	2.9	31	8.3	588	8.8
20 to 49	62	5.9	.....	.....	2	1.9	60	16.0	1750	26.2
50 or over	24	2.3	.....	.....	.....	.....	24	6.4	2129	31.9
None	497	46.9	.....	.....	.....	.....	.....	.....	.....	.....

ter is located is proportionately higher than any of the counties surrounding it.

The selection of territory for surveys was made with the idea that the effect of migration of persons infected with venereal disease from the rural communities to the city for treatment might in some wise be measured. Obviously the location of public clinics for the treatment of venereal disease influences the case rate of the county as is reflected in the comparative rates quoted below.

A similar situation exists in the two eastern groups. Those patients in the counties of Chesterfield and Prince George go either to Richmond in Henrico County or Petersburg in Dinwiddie County where in the one instance we have the Medical College of Virginia with a venereal disease clinic, and in the other a hospital for colored persons which reported the largest number of cases of inmates under treatment for syphilis of any institution in the State.

TABLE No. IV.

THE PERCENTAGE OF THE TOTAL PRIVATE PRACTICE CASES OF VENERAL DISEASE, ACCORDING TO DIAGNOSIS AND STAGE OF THE DISEASE, AS COMPARED WITH THE PERCENTAGE OF EACH GROUP IN PUBLIC CLINICS

SEX AND COLOR OF PATIENT	UNDER TREATMENT IN:	TOTAL		NUMBER OF CASES				PERCENTAGE OF TOTAL CASES	PERCENTAGE OF CASES			
				GONORRHEA		SYPHILIS			GONORRHEA		SYPHILIS	
		No.	%	ACUTE	Chronic	EARLY	LATE		ACUTE	Chronic	EARLY	LATE
Grand total.....		8475	100.0	2214	1508	1775	2978	100.0	26.1	17.8	20.9	35.1
Total.....	Private practice...	6694	79.0	2081	1361	1342	1910	100.0	31.1	20.3	20.0	28.5
	Public clinics.....	1781	21.0	133	147	433	1068	100.0	7.5	8.3	24.3	60.0
White:	Private practice...	4397	88.6	1580	873	839	1105	100.0	35.9	19.9	19.1	25.1
	Public clinics.....	564	11.4	80	58	105	321	100.0	14.2	10.3	18.6	56.9
Colored:	Private practice...	2297	65.4	501	488	503	805	100.0	21.8	21.2	21.9	35.0
	Public clinics.....	1217	34.6	53	89	328	747	100.0	4.4	7.3	27.0	61.4
Male:	Private practice...	4754	82.6	1653	904	944	1253	100.0	34.8	19.0	19.9	26.4
	Public clinics.....	1002	17.4	105	85	262	550	100.0	10.5	8.5	26.1	54.9
Female:	Private practice...	1940	71.3	428	457	398	657	100.0	22.1	23.6	20.5	33.9
	Public clinics.....	779	28.7	28	62	171	518	100.0	3.6	8.0	22.0	66.5
White Male:	Private practice...	3250	91.0	1251	616	614	769	100.0	38.5	19.0	18.9	23.7
	Public clinics.....	323	9.0	63	30	64	166	100.0	19.5	9.3	19.8	51.4
White female:	Private practice...	1147	82.6	329	257	225	336	100.0	28.7	22.4	19.6	29.3
	Public clinics.....	241	17.4	17	28	41	155	100.0	7.1	11.6	17.0	64.3
Colored male:	Private practice...	1504	68.9	402	288	330	484	100.0	26.7	19.1	21.9	32.2
	Public clinics.....	679	31.1	42	55	198	384	100.0	6.2	8.1	29.2	56.6
Colored female:	Private practice...	793	59.6	99	200	173	321	100.0	12.5	25.2	21.8	40.5
	Public clinics.....	538	40.4	11	34	130	363	100.0	2.0	6.3	24.2	67.5

Let us consider the north central group in which, according to Map B of Figure 2, each of the three counties has approximately the same density of population, and yet Albemarle County which has the large venereal disease clinic of the University of Virginia has a case rate which is very much higher than either of the other counties. In one instance it is more than twice as high and in the other instance nearly five times as high.

It is a known fact that in the presence of adequate and convenient facilities for the treatment of venereal disease more persons infected seek treatment. This fact undoubtedly accounts in part for the reported high case rate in Albemarle County.

In the other eastern group, the patients from Nansemond and Princess Anne go either to Portsmouth or Norfolk for treatment, while those in Warwick and Elizabeth City go to Newport News.

In the west group of Lee, Wise and Russell counties we find the case rate for venereal disease in Wise County very high, especially among the colored population, this rate being 44.9 per 1,000 population; whereas among the white population the rate for this county is 8.4 per 1,000. The rate among the colored population for Lee County is also very high being 25.9 per 1,000. Undoubtedly in this mountain district there is a great deal of work to be done in regard to dissemination of in-

formation relative to prophylaxis and prevention.

The operation of a well-organized clinic at Norton in Wise County up until the time the survey was undertaken probably exercised some influence on the existing high prevalence rate. While this clinic was in operation it drew patients not only from Wise County but also from Lee and Russell County. This tendency of the Lee and Russell County patients to seek treatment in Norton when the clinic was in operation probably continued at the hands of private practitioners after the closing of the clinic.

Let us consider the relation of the case rates for the white and the colored races, especially in those counties where the rates seem to be much higher than the average. In the first place we start with an average case rate for the whites of 6.15 and an average rate for the colored of 8.98. In Albemarle County where 29 per cent of the population is colored, we have a wide difference in the rates for the two races, that of the white being 7.38 while that for the colored is 24.69 per 1,000 population. In the adjoining county of Augusta with approximately the same density of population where there is only one-half as many colored persons and nearly twice as many white ones, we have a case rate for the white very much under the average, the rate being 3.73 while that for the colored is slightly above the average, 11.69.

In Dinwiddie County where the colored and white population is practically the same we have a preponderance of venereal disease among the colored population, the rate being 21.83 per 1,000 as compared with 8.50 for the white population.

We have included the population of the city of Newport News in the population of Warwick County, inasmuch as many of the persons residing therein seek their medical aid for venereal disease in Newport News. We find the rates for the white population to be 6.19 as compared with 11.40 for the colored. Approximately two-thirds of the population in the county and the city are white.

Since with the concentration of population there is a greater opportunity for specialization in the treatment of diseases, one expects to find better facilities for diagnosis and treatment and therefore a higher reported venereal disease rate where the ratio of population to a physician is six or seven hundred as in Henrico and Roanoke Counties, than when there are twenty-two to twenty-three hundred persons per physician as in the sparsely settled predominately rural Princess Anne and Halifax Counties.

TABLE NO. V.

PREVALENCE RATE OF VENERAL DISEASES PER 1,000 POPULATION IN THE EIGHTEEN COUNTIES OF VIRGINIA UNDER SURVEY

County	Total Cases			Rate Per 1,000			Syphilis		Gonorrhea	
	Total	White	Colored	Total	White	Colored	Cases	Rate	Cases	Rate
Albemarle	453	193	260	12.35	7.38	24.69	366	9.97	87	2.37
Augusta	226	153	73	4.78	3.73	11.69	110	2.33	116	2.45
Chesterfield	51	31	20	2.23	2.07	2.52	24	1.05	27	1.18
Dinwiddie	863	244	624	15.15	8.50	21.83	663	11.57	205	3.58
Elizabeth City	113	67	46	4.18	3.74	5.03	46	1.70	67	2.48
Halifax	94	60	34	2.21	2.73	1.65	42	.99	52	1.22
Henrico	1906	1320	586	8.55	8.65	8.35	1058	4.75	848	3.81
Lee	88	70	18	3.30	2.70	25.97	46	1.73	42	1.58
Nansemond	118	38	80	3.74	2.76	4.50	37	1.17	81	2.57
Norfolk	1589	850	739	5.41	5.07	5.87	892	3.04	697	2.37
Pittsylvania	653	391	262	7.64	6.82	9.32	296	3.46	357	4.18
Princess Anne	43	17	26	2.78	1.76	4.47	17	1.10	26	1.68
Prince George	67	59	8	3.35	5.58	.85	28	1.40	39	1.95
Roanoke	905	707	198	10.06	9.43	13.18	436	4.85	469	5.21
Rockbridge	56	37	19	2.29	1.72	6.30	29	1.18	27	1.10
Russell	33	23	10	1.11	.81	7.01	24	.81	9	.30
Warwick	554	255	299	8.22	6.19	11.40	286	4.24	268	3.98
Wise	658	446	212	11.43	8.44	44.92	353	6.13	305	5.30
Total	8475	4961	3514	7.07	6.15	8.98	4753	3.97	3722	3.11

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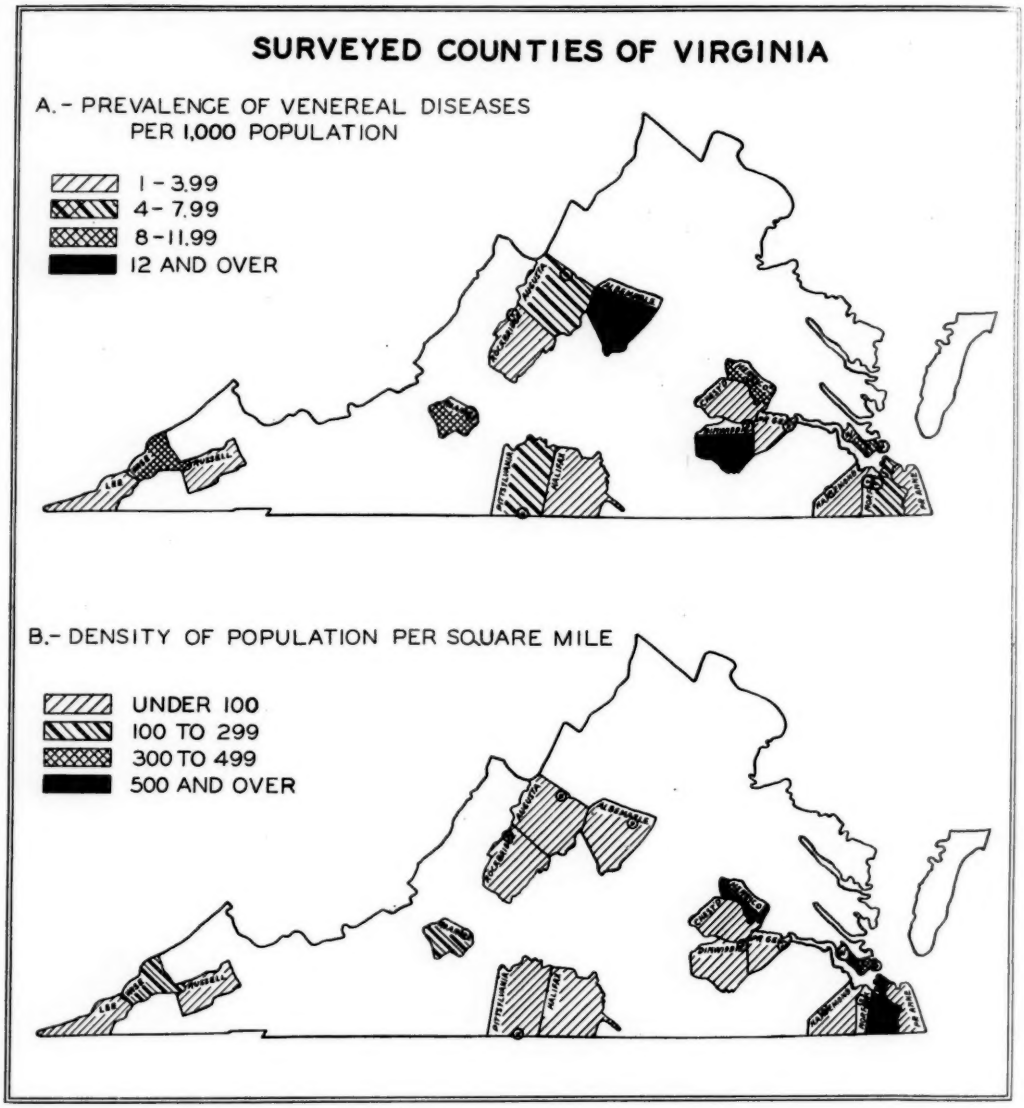

Fig. 2.

Prevalence Rates in Independent Cities Surveyed

Among the twenty cities of Virginia which are independent of any county organization and occupy the status of a county, eight were included in the survey. Let us consider the prevalence rates for cases of venereal disease under treatment in these cities with the exception of Norfolk and Portsmouth. These two cities were omitted because from the data gathered during the survey it was not possible to determine the actual prevalence rates for venereal disease for the resident population.

The highest prevalence rate for venereal disease under treatment in these cities exists in Charlottesville and Petersburg, the rate being 38.1 and 22.3 respectively. The lowest prevalence rates among these cities is reported for Richmond which is 9.5. The rates for gonorrhea are lower than those for syphilis except in Danville where they are slightly higher.

Among the whites the prevalence rates for syphilis are higher for the males than the females in each of the cities surveyed except Charlottesville. The same is true of the colored males. The colored female prevalence rate in Charlottesville is the highest syphilis rate in the six cities.

Table VI.

Prevalence of Venereal Disease in Six Cities in Virginia, by Diagnosis, Race and Sex of Patient

City	Number of Cases			Rate Per 1,000 Population		
	Syphilis and Gonorrhea	Syphilis	Gonorrhea	Syphilis and Gonorrhea	Syphilis	Gonorrhea
TOTAL:						
Charlottesville	442	362	80	38.1	31.2	6.9
Staunton	163	91	72	10.2	5.7	4.5
Petersburg	860	660	200	22.3	17.1	5.2
Richmond	1,867	1,038	829	9.5	5.3	4.2
Danville	518	230	288	21.6	9.6	12.0
Roanoke	732	367	365	11.0	5.5	5.5

	Number of Cases				Rate Per 1,000 Population			
	Male		Female		Male		Female	
	White	Colored	White	Colored	White	Colored	White	Colored
SYPHILIS:								
Charlottesville	58	95	81	128	14.6	67.1	18.3	71.6
Staunton	47	23	11	10	7.7	21.6	1.5	6.3
Petersburg	67	312	66	215	6.4	40.6	5.9	23.2
Richmond	471	208	195	164	7.3	7.3	2.8	4.9
Danville	90	72	31	37	10.5	25.6	3.4	10.5
Roanoke	187	56	82	42	7.0	9.6	3.0	6.6
GONORRHEA:								
Charlottesville	33	25	11	11	8.3	17.7	2.5	6.2
Staunton	31	19	19	3	5.1	17.8	2.6	1.9
Petersburg	63	65	45	27	6.0	8.5	4.0	2.9
Richmond	468	134	156	71	7.3	4.7	2.2	2.1
Danville	148	33	68	39	17.3	11.7	7.4	11.0
Roanoke	245	29	77	14	9.1	5.0	2.8	2.2

Comparison of Prevalence in Virginia With Other States

The following table gives the prevalence rates for States which have been included in the survey. It will be noted that Virginia has a considerably higher prevalence rate than New York, Oregon, Kansas and Iowa which States have negro populations of less than 3 per cent. The Virginia rate is very similar, in fact even less than that of Mississippi and Tennessee both of which have a comparable number of colored population. In the territory under survey the colored population in Virginia formed 33 per cent of the total, 27 per cent in Tennessee and 56 per cent in Mississippi.

Comparison of Prevalence in Virginia Cities With Other Cities

In Table No. VIII are listed all of the cities which have been included in the prevalence surveys, the rates ranging from 9.2 to 38.1 per 1,000 population. The average rate for all the cities is 13.03, the mean rate 17.12. The average rate for the cities having populations less than 75,000, is 18.1 as compared with 12.4 for the cities with more than 75,000.

Incidence Factor for Syphilis

From the files of five public clinics treating syphilis in the counties surveyed, 225 case records of syphilis were studied as to the number of treatments given and the length of time between admission and last visit to the clinic. It was found that the mean duration of treat-

TABLE VII

COMPARISON OF PREVALENCE RATES PER 1,000 FOR WHITE AND COLORED POPULATION IN SEVEN STATES

STATE	POPULATION			NUMBER OF CASES			RATE PER 1,000 POPULATION		
	TOTAL	WHITE	COLORED	TOTAL	WHITE	COLORED	TOTAL	WHITE	COLORED
Iowa	2,428,000	.....	.....	6214	.....	.....	2.56	.....	.....
New York	4,765,275	.....	.....	25113	.....	.....	5.27	.....	.....
Oregon	877,682	.....	.....	4157	.....	.....	4.74	.....	.....
Kansas	591,769	.....	.....	3135	.....	.....	5.29	.....	.....
Virginia (18 counties)	1,198,678	802,848	395,830	8475	4961	3514	7.07	6.18	8.88
Mississippi (16 counties)	557,498	245,299	312,199	4202	1628	2574	7.54	6.64	8.24
Tennessee (31 counties and 3 others)	1,430,281	1,047,480	382,801	11346	6704	4642	7.93	6.40	12.13

ment and observation in these clinics was 169 days during which time an average of thirteen treatments were given. This duration of the time of treatment and observation would indicate that there must be a complete change in clinic cases under treatment and observation for syphilis 2.16 times a year.

TABLE VIII

COMPARISON OF PREVALENCE RATES PER 1,000 WHITE AND COLORED POPULATION IN THE CITIES OF VIRGINIA AND TENNESSEE AND THE CITY OF SAINT LOUIS

CITY	POPULATION			NUMBER OF CASES			RATE PER 1,000 POPULATION		
	TOTAL	WHITE	COLORED	TOTAL	WHITE	COLORED	TOTAL	WHITE	COLORED
Knoxville, Tenn.	105,400	90,096	15,304	971	786	185	9.21	8.72	12.09
Richmond, Va.	197,242	135,111	62,131	1,867	1,290	577	9.47	9.55	9.29
Staunton, Va.	15,912	13,255	2,657	163	108	55	10.24	8.15	20.70
Roanoke, Va.	66,319	54,116	12,203	732	591	141	11.04	10.92	11.55
St. Louis and 5 counties	1,287,183	1,186,384	100,799	15,102	12,703	2,399	11.73	10.71	23.80
Nashville, Tenn.	138,600	96,867	41,733	2,113	1,254	859	15.25	12.95	20.58
Chattanooga, Tenn.	73,500	49,517	23,983	1,440	877	563	19.59	17.71	23.47
Memphis, Tenn.	190,200	118,533	71,667	3,782	2,018	1,764	19.88	17.02	24.61
Danville, Va.	24,031	17,687	6,344	518	337	181	21.56	19.05	28.53
Petersburg, Va.	38,648	21,682	16,966	860	241	619	22.25	11.12	36.48
Charlottesville, Va.*	11,606	8,403	3,203	442	183	259	38.08	21.77	80.86

*Sixty per cent of the attendance at the venereal disease clinic in Charlottesville comes from the surrounding county.

OPINION OF PHYSICIANS ON STATUS OF DISEASE

The questionnaire made provision for recording the opinion of the physicians as to the status of venereal disease. Forty-five per cent of the physicians answered the question. 13 per cent to the effect that the disease was on the increase, 19 per cent stated in their opinion it was on the decrease, and 13 per cent that there was no change. Of those physicians indicating the disease was on the increase, 34 per cent had fifteen or more cases under treatment, while of those physicians expressing the opinion that the disease was on the decrease, only 9 per cent had fifteen or more cases under treatment.

SUMMARY

This survey of the prevalence of venereal diseases in eighteen counties of Virginia includes reports from clinics, physicians, and other institutions serving a population of 1,198,678, approximately one-half of the population of the State.

The case rate for gonorrhea is 3.11 while that for syphilis is 3.97. The case rates for gonorrhea were found to be two and one-half times greater for the male than for the female; the syphilis rate for the male is only one and one-half times greater than for the female.

The counties with the highest case rates for venereal disease prevalence were Dinwiddie, Albemarle, Wise, and Roanoke, ranging from ten to fifteen cases per 1,000 population.

In those counties where the colored population forms a very small proportion of the county population the prevalence rate for colored persons with a venereal disease is extremely high, as, for example, in Wise and in Lee Counties where they form less than 10 per cent of the population, the rates are 44.9 and 25.9 per 1,000, respectively. In those counties where there is a more or less equal division among the white and colored races the rates are very much more alike with the exception of Dinwiddie County where the rates for the colored are also very high being 21.8 as compared with 8.5 for the white.

Among those patients under treatment in public clinics the greatest number are those with late syphilis. Approximately three times as high a percentage of the cases among the colored patients are under treatment in public clinics as among the white. The smallest percentage of the white males are treated in public clinics, the percentage of white females in public clinics being almost twice as large.

The highest prevalence rate for the Independent Cities of Virginia surveyed is found in Charlottesville and Petersburg, the rates being 38.1 and 22.3, respectively. The lowest prevalence rate among these cities is reported from Richmond. which rate is 9.5

Virginia has a considerably higher prevalence rate than those States surveyed in which the colored population is less than 3 per cent. However, in those States in which there are a comparable number of colored population, the Virginia rate is very similar, in fact even less than that of Mississippi and Tennessee.

TABLE IX

DISTRIBUTION OF PHYSICIANS BY THE NUMBER OF CASES OF VENEREAL DISEASE REPORTED UNDER TREATMENT, SHOWING THEIR OPINION ON THE PRESENT STATUS OF VENEREAL DISEASE

NUMBER CASES	THAT DISEASE HAS INCREASED		THAT DISEASE HAS DECREASED		NOT CHANGED		NO OPINION GIVEN		NUMBER OF PHYSICIANS		NUMBER CASES UNDER TREAT.	
	NUMBER	PER CENT	NUMBER	PER CENT	NUMBER	PER CENT	NUMBER	PER CENT	NUMBER	PER CENT	NUMBER	PER CENT
Total	134	12.7	203	19.2	135	12.8	587	55.4	1059	100.0	6684	100.0
1 to 4	30	22.4	82	40.4	38	28.2	82	14.0	232	21.9	540	8.1
5 to 9	30	22.4	32	15.7	37	27.4	50	8.5	149	14.1	1001	15.0
10 to 14	12	8.9	15	7.4	17	12.6	16	2.7	60	5.7	676	10.1
15 to 19	9	6.7	5	2.5	11	8.1	10	1.7	35	3.3	588	8.8
20 to 49	25	18.7	9	4.4	13	9.6	15	2.6	62	5.8	1750	26.2
50 or over	11	8.2	4	2.0	4	3.0	5	.8	24	2.3	2129	31.9
None	17	12.7	56	27.6	15	11.1	409	69.7	497	46.9	.....	.....
Total	134	100.0	203	100.0	135	100.0	587	100.0	.....	.....	.....	.....

PERINEOTOMY VERSUS LACERATION.*

By ROBERT PATTON KELLY, M. D., F. A. C. S.,
Lynchburg, Va.

When we cut or sever any part of the human anatomy, the term for the operation is generally the name of the part cut with "-otomy or -ectomy" appended. Following this idea and recalling the fact that Dr. Polak "called my hand" at a meeting of the College of Surgeons when I used the word "episiotomy" in discussing his paper, I have taken as the subject of my remarks "Perineotomy versus Laceration." However, perineotomy is really a deeper incision into the perineum than that which is usually done under the name of episiotomy. In spite of this I shall reserve the right to use the two words synonymously in order not to offend the senses of the most technical.

The history of efforts to protect the perineum from serious injury dates from the time of Hippocrates, who used salves and douches, hoping to induce sufficient relaxation to prevent a tear. This was also advised by Baudelocque and many others; and to this day is used by some, while others have resorted to dilating and ironing out the perineum, as well as many other methods, all of which have been unsuccessful in preventing laceration.

The earliest accounts I am able to find of

*Read at the sixtieth annual meeting of the Medical Society of Virginia, in Charlottesville, October 22-24, 1929.

We regret to announce that Dr. Kelly died June 11, 1930, after this paper had been put in type and corrected by author.

episiotomy or perineotomy are those of Ould, in 1742, and Michaelis, in 1810, the former cutting the vulvar outlet and the latter incising the perineum to avoid a tear. Among others who have practiced similar procedures may be mentioned Ritgen, Schultze, Scanzoni, Crede, Pomeroy, Henkle, Tarnier and Duhrssen, the last named in 1888. The work of these famous men, combined with the teachings and influence of DeLee and a few others, has led to an almost perfect technique in the employment and repair of episiotomy or perineotomy.

Our professional procedures and ideas are generally, like our moral life, influenced by the sort of company we keep. We subconsciously find ourselves thinking and acting more or less in the same manner as those with whom we are associated, both personally and professionally. As a result of our different ideas, arising from varying professional environment, we naturally often do not agree as to certain procedures in the management of our cases; therefore, I shall not feel the least bit hurt if any one disagrees with me in what I shall say concerning episiotomy.

For my part, I feel that nothing else I do has been so great a boon to me and my patients as the operation known as episiotomy, and when I look back over my first twelve years of professional life, the years of general practice, I wonder how I was able to do obstetrics without the employment of this most useful operation.

When one witnesses his first episiotomy or perineotomy he is shocked; he wonders why that crazy doctor is cutting such a terrible gash in this poor woman's perineum, and he feels that the doctor will never be able to restore his patient to a normal condition. However, after observing a few of these operations, one begins to weaken in his objections and finally becomes converted and is an advocate of the method.

Episiotomy may vary in extent from a very small incision to one going into the levator muscle. It may also vary considerably as to the direction of the cut from a median to a lateral incision, depending on the indications, and the preference of the operator. My own preference, due to my professional contacts, no doubt, is a left medio-lateral. Many advise a median incision, claiming more ease in repair because of similar structures on the two sides, but a little practice will very soon render the medio-lateral repair just as easy, and one has the added advantage of avoiding injury to the sphincter ani by extension of the cut into or through that muscle.

The indications for episiotomy vary according to the ability of the obstetrician to repair the cut, and are governed, to some extent, by the place of delivery, whether home or hospital. In some of the home cases, and in the hospital, too, we can often prevent the use of low forceps by resorting to a small episiotomy, which is much to be preferred.

There are two guides as to the proper moment to cut the perineum when it is being pressed upon by the baby's head; one is the opening of the anus and its dislocation downward and forward, the other is the bleaching of the skin from stretching by the pressure or an incipient tear in the skin around the baby's head. In the latter case it is sometimes too late, but when these things occur it is high time to cut the perineum if we wish to prevent laceration.

I shall mention some of the most important indications for this operation, according to my personal views. In the delivery of so-called normal cases in primiparae, when a tear is about to occur, I know of no better method of treatment than to incise the perineum, thereby avoiding a laceration which may extend in various directions and give the most expert surgeon the greatest trouble to repair, the result even then being not nearly so good as that obtainable from the repair of an episiotomy, to say nothing of the shorter time required in the latter case.

In forceps deliveries this operation has one of its most valuable applications, from the standpoint of obstetrician, patient and baby. As a rule I do the perineotomy before attempting rotation of the head, since the maneuver is rendered considerably easier; while otherwise it may itself cause more or less injury to the vaginal mucosa and perineum. The application is made much easier and the amount of traction required to extract the child is much less, resulting often in the difference between a living baby and one dead, either at the time of delivery, or a few days later, from cerebral hemorrhage. It is forceps deliveries, more than any other one thing, that destroy the perinei of so many women, the lacerations in these cases being almost one hun-

dred per cent; and they are more extensive, besides being extremely difficult of repair. In such cases we often prevent complete laceration by employment of this operation.

Another field of application in which the value of episiotomy cannot be overestimated is in the delivery of breech cases, breech extractions, or any case in which it becomes necessary to deliver the baby feet-first, such as version and extraction. In these cases we are often surprised by the ease with which delivery of the after-coming head is accomplished.

Indications for this operation, which I simply wish to mention, are met with in perinei which have had former repairs and contain considerable scar tissue; and in all cases in which delivery may be urgent for the sake of either mother or baby, episiotomy offers the best chance for good results.

As a result of this operation there are a number of advantages which may be mentioned in a general way. In the first place, infection in episiotomy repairs is much less frequent than in lacerations, due, perhaps, to less trauma and to the fact that a smooth cut will heal better, and also because the trauma in episiotomy is less and the tissues, being devitalized the less, offer the greater resistance to infection. In other words, episiotomy, where laceration would otherwise occur, rather prevents than causes infection.

We all are familiar with the multipara who consults us with a large cystocele and rectocele, the result of a laceration which occurred at the birth of a former baby, usually the first. Many of these patients have misplacements and relaxation or prolapse of all the pelvic organs, and no repair operation can restore these conditions to quite normal, whereas, in the great majority an episiotomy properly repaired would have prevented the occurrence of such a pathologic condition. Many women suffer for years as the result of such lacerations and finally are compelled to submit to operation for relief. The cost of these operations amounts to hundreds of dollars; so merely from economic considerations we should try to deliver our patients with as little perineal injury as possible Episiotomy offers the best solution of this problem.

The technique of the repair of an episiotomy is extremely important. On the character of the repair depend the results; and this also applies to lacerations. The usual "through and through" method of suture will not suffice in either condition. (For a full description of the technique of this operation and its subsequent repair, as well as the repair of both old and new lacerations, see my paper on "The Care and Repair of the Cervix and Perineum in Confinement Cases," VIRGINIA MEDICAL MONTHLY, February, 1928).

The technique of this operation as performed in the Chicago Lying-in Hospital by DeLee and his associates is, briefly, as follows: The vaginal mucosa is first sutured, using chromic cat-gut, continuous, beginning at the extreme end of the vaginal cut, carrying this suture to the muco-cutaneous junction, where it is made sub-mucous, if not already so, and then used to close the sphincter cunni muscle, left long temporarily and laid on patient's abdomen. With two Allis clamps the levator, if cut, is now "fished" out on either side. A second rubber glove, known as the rectal or perineorrhaphy glove, is then put on the left hand, and the left fore-finger is inserted into the rectum in order to protect the latter from injury, while one, two or three interrupted cat-gut sutures are passed through the muscle. These sutures are not tied as put in, but are clamped and held by an assistant. The finger is then withdrawn from the rectum and the extra rubber glove is removed and the hands of the operator are then thoroughly washed in the bichloride and lysol solutions. The perineal sutures are then tied. A second cat-gut suture of the same material is then used as a continuous suture to close the urogenital septum and the fascia, is then tied with the original vaginal suture and cut off with the latter. A subcutaneous silkworm-gut, starting just inside the vagina, is then used to close the skin and is run rather deep in the fascia at the lower end of the skin incision and made to emerge about two or three centimetres to the left of this point. The ends of this suture are left long or very loosely tied together. Instead of the silkworm-gut for the skin, I have been using, for the past four years, the long end of the original vaginal suture as a subcutaneous suture to close the skin, and, as a result, the patients have suffered less and have had no infections worth mentioning.

The above technique may be modified, after the vaginal mucosa and the sphincter vaginae muscle are sutured, by substituting for the

perineal cat-gut sutures three or four "figure-of-eight" silk-worm-gut, the first part of the figure taking in the levator muscle and the rest of the figure including the urogenital septum, fascia and skin, the original vaginal cat-gut suture being tied with the upper silk-worm-gut suture. These sutures are not cut short, after being loosely tied, but are twisted together and tied in one knot several inches from the skin wound. This latter, simpler method is recommended for those doing their first repairs of this kind and has the additional advantage of saving considerable time where this is an item to be considered. There is probably less danger of infection in this manner of repair. The disadvantages of this method are that the patients suffer considerably more and the stitches have to be removed and the cosmetic effect is not always as good.

The point I wish to stress most is that if we do this operation, we will prevent many severe lacerations and, consequently, much physical discomfort and actual suffering, as well as the subsequent expenditure of large sums of money for surgical treatment and hospital charges. Furthermore, when we consider the other advantages to which I have referred above, we must admit that in the proper application and repair of episiotomy or perineotomy we offer our patients an ounce of prevention which cannot be equalled by many pounds of cure.

DISCUSSION.

DR. C. J. ANDREWS, Norfolk: I am very much interested indeed in this subject. I have been using this plan for a number of years, not exactly as Dr. Kelly does, but very nearly. In the first place, undoubtedly the plan of allowing the head of the baby to remain on the perineum for several hours is not good for either the woman or the baby—that is, if you know what to do and are prepared to do it. In the second place, anyone who has done abdominal surgery knows if you try to do anything in the abdomen with the woman half under the anesthesia her muscles are thoroughly tight and you can not do much, but if you put her to sleep the muscles relax. So, while Dr. Kelly did not mention anesthesia, I think getting complete anesthesia is one of the first things.

One of the first objects is not only not to tear the perineum but not to tear the vaginal supports. He did not mention ironing the perineum. Put the woman thoroughly to sleep, then iron the perineum, and relax the vaginal supports. Practically always I put on the forceps and deliver the baby.

A number of years ago I saw Dr. DeLee do his method of perineotomy, and I have used that. I had one case in which the sutures did not hold very well, and I think probably that had something to do with my stopping its use. I would say this method Dr. Payne put on the board is a good illustration of what I do. Make a median incision, and curve toward the side of the rectum. If there is any likelihood of your stitching the rectum with your stitch, then put your finger in there. One of the most difficult cases I have had to deal with (I am very happy to say I did not do it myself), is where several stitches were put in the rectum and caused fistulas. There is no doubt that when these women come in for their discharge examination, six weeks after delivery, you would have great difficulty in telling that they have ever had a baby. It certainly seems worth while to try to prevent cystocele or rectocele if you can prevent them by perfectly rational means. Incidentally, it saves the woman about two hours' labor and I think it prevents a great many other troubles.

DR. LEWIS M. ALLEN, Winchester: This subject interests me very much. As just a little while ago it seemed a difference of opinion arose, I am going to differ just a little bit with those who have gone before. I feel that if I felt called upon to do an episiotomy or perineotomy, or whatever you may choose, in as many cases as we have heard it is probably indicated, I had learned very little obstetrics in the time I had practiced. I am certainly not one of those who believe that protection of the perineum is without result. I do episiotomy or perineotomy in a few cases and have done it for many years. I feel I almost owe an apology and feel it quite impertinent in me to differ with a man like Dr. DeLee, but I feel that I can prevent a perineal laceration in a very large majority of the cases, and that episiotomy will not be indicated in a majority of the cases but only in a very small number. And, as to the advantages and disadvantages of the operation, I believe Dr. Andrews mentioned one. One is scar tissue after the operation. While it is not the amount of scar tissue that follows perineal laceration, yet there is a certain amount of scar tissue, and in a second delivery there is likely to be a laceration. As to stating the time when laceration will occur, I must say I am in considerable doubt, because I have delivered a considerable number of women in whom laceration seemed inevitable, but by persistence in ironing out the perineum and by conservative means, with the patient relaxed by anesthesia, the laceration has been prevented. Practically all my patients are under anesthetic when the head is delivered.

Dr. Kelly said he rotated the head after the perineum is cut. One of the reasons for rotating the head is the resistance of the perineal tissues below. Therefore, if we remove the resistance of these perineal tissues by cutting them, we do not have that resistance and do not have nature's method of rotating that head.

One of the most frequent indications, it seems to me, for the performance of an episiotomy is in those cases where the head has been pressed into the pelvis and remains there a considerable length of time and, by reason of its remaining there, the pelvic circulation is very much interfered with and the resistance of the tissues is lost. All of us have seen those cases, especially in doing consultation work. The circulation is so interfered with in such cases that the perineal tissues do not tear but simply break open like blotting paper. No power in the world can prevent that break. Here, it seems to me, is a demand for episiotomy. Cut, and cut as far as necessary, on either side; it makes no difference.

Many years ago I abandoned the use of the finger in the rectum in doing perineotomy. It is not a very clean surgical procedure. The tissues can be pulled up from within without introducing the finger.

The remarks as to anesthesia a few minutes ago seemed to me almost unnecessary, because, as I re-

marked, practically all my patients are anesthetized, not to surgical degree, but to what I call the obstetrical degree, so that the tissues are relaxed.

DR. GREER BAUGHMAN, Richmond: I just want to call attention to one or two points and emphas ze one or two things that Dr. Kelly has already said. I am interested in episiotomy not simply for the mother (and I may say just in passing that we have had brilliant results with them and sometimes it is rather difficult to tell afterwards whether they have been cut or have not been cut), but I do it mainly in the interest of the baby.

How do I judge how wide to cut? I depend as much as anything else upon what the anus is doing. If the first time the head hits the perineum the anus opens wide, I know I have to cut and cut good and deep. I am not a genius at this cutting; sometimes I cut and they unravel a little more, but they unravel on the skin, and that does not mean anything. It is the fascia that I want to save, and if I can cut before that fascia is widely torn, I think I am doing a good thing.

As to the question of ironing out, I think sometimes that is a good procedure. But what are you really doing? You are shoving muscles back and causing the fascia to relax. Sometimes you tear it and do not know it.

DR. KELLY, closing the discussion: I am going to say very little, gentlemen, but I could say a great deal. I think we could stand here and argue about this thing for some hours. I know, as I said at the beginning, that many men differ with me as to when this operation should be done and how it should be done. As I said in my paper, the way we think about these things depends upon our experience, our results, and our teaching. I will say one thing in self defense, and that is, so far as the scar tissue is concerned as a result of these episiotomies, in a majority of my cases when they come back for the next delivery you can not see where the scar is, and I repeat the episiotomy in exactly the same place. I have had some of my cases delivered later by other men and have had some of those men say to me that when the woman came in they thought she was a primipara.

I do not want to be understood as saying that the episiotomy should be done in every case. There are a few cases, very few, that deliver without laceration, but when they come in, six or eight weeks later, they have not the same perineum.

One of the doctors spoke of anesthesia. I never deliver any woman who is conscious of the birth of her baby. I did not intend to go into that. In all these cases I do deliver the patient under anesthesia. When I do an episiotomy I get the patient to the stage where she can not feel the cut, perform the episiotomy, and then let her deliver herself.

Referring to the posterior occiputs, I think in the majority of these cases there is not very much pressure on the perineum until after the baby's head has been rotated. My rule is this; in a primipara who has been in the second tage of labor for one hour and who is not making progress and does not bid fair to deliver herself very early, for the sake of the baby, as Dr. Baughman said, as well as herself, I do an episiotomy, put on forceps and deliver the baby without much trauma to either mother or baby.

I thank the gentlemen for the discussion and am sorry that we do not all agree.

OPTIC NEURITIS—THE TONSIL AS AN ETIOLOGIC FACTOR.*

By W. O. BAILEY, M. D., Leesburg, Va.

The last two decades have witnessed a metamorphosis in every field of medicine and surgery. Empiricism and theory have been hurled ruthlessly down from their unstable pinnacle of arrogant omniscience and reduced to a state of intellectual catalysis. In no field of medicine have greater changes been wrought than in the field of ophthalmology, and in no field of medicine have these changes resulted in a more congenial understanding and cordial interdependence than that which exists between the ophthalmological specialist and the practitioner of internal medicine. In this great revolution of thought, optic neuritis has received its just due of transmutation.

Anatomically, the optic chiasma rests upon the tuberculum sellae and the anterior part of the diaphragma sellae, between the two optic thalami, with the anterior perforated space, on each side, juxtaposed. Above is the lamina terminalis; behind the tuber cinereum.

The optic nerves are really outgrowths of the cerebrum. This makes them occupy a distinctive position in the anatomy of the human body. Dura, pia and arachnoid cover them. Fibers derived from the ganglionic cells of the retina, enter the orbit and optic foramen and, lying near the sphenoidal and ethmoidal sinuses, pass through the chiasma and optic tracts to arborize around cells in the lateral geniculate body, pulvinar and superior colliculus. From thence they go to the cuneus near the calcarine fissure. The crossed and uncrossed fibers and Gudden's commissure are too familiar to bear repetition.

Etiologically: (1) Diseases of the brain and its membranes; (2) Syphilis; (3) General diseases and chronic disturbances of nutrition; (4) Anemia (primary and secondary); (5) Diseases of menstruation and pregnancy; (6) Chemical poisoning; (7) Heredity; (8) Idiopathic; and (9) Orbital and peri-orbital affections, are given. The tonsil is mentioned casually by some authorities; by many not at all. By most it is stated to be of rare occurrence, but admitted; if it be removed and is a focus, cure follows.

Pathologically: Three kinds are recognized: (a) True, exudative or septal, where protrusion of the disc is slight but exudation marked;

*Read before the Virginia, Maryland and District of Columbia Medical Society, during Fall of 1929.

(b) Congestive, or choked disc, where protrusion of the disc is marked, exudation absent and spinal pressure usually increased; and (c) Retrobulbar, or axial, where the orbital part of the neuron is affected.

Why is selective localization of the tonsil made by the optic nerve? Billings and Rosenow explain it thus:

"Bacterial emboli pass through the blood stream to small terminal vessels. If the organisms are sufficiently virulent, and possess specific affinity for the tissue, they excite characteristic reactions and morbid changes. Scant blood supply and low oxygen content favor this invasion. Mesoblastic tissue appears to be especially favored; hence infection through the lamina cribrosa of the sclera."

Bibliographically: From 1917 to 1922, Wyler, Sobotky, Hansell, Carpenter, Bell, Suker and Harry report nine cases—six monocular and three binocular. Tonsillectomy was performed in eight cases and refused in one. Fields of vision, for form and color, were reported contracted in five cases, and remained permanently so in one. The other four cleared. The case which was not operated on likewise recovered. They insist that tonsillectomy cured the condition in the other eight. Normal vision was obtained in all cases but one. In this vision was 4/5.

Specifically: Three cases have come to me within the last four years,—one characterized by papillitis, one by retrobulbar neuritis, and the third was septal in nature. There was nothing distinctive about the pathology in any one of these cases. The first two were monocular, with sudden diminution of vision. In the first two, vision was, respectively, 20/200 and 8/200 when first seen. Within thirty days after tonsillectomy, vision in both eyes was normal. In the septal case, vision in the right eye was 3/200 and in the left 20/200 when first seen. Blood and spinal Wassermanns, X-ray of teeth and sinuses, general physical examination, urinalysis, etc., revealed nothing. The tonsils were hypertrophied, cryptic and diseased. Tonsillectomy was recommended and refused. A full course of salvarsan was given despite negative Wassermanns. Total blindness ensued within ninety days. The patient is now led about. Unfortunately, in none of these cases was the visual fields taken.

Prognosis is good with early operation. Temporizing is irrational and futile.

The future is of auspicious augury. A figure, curious and solitary, looms upon the horizon. His insignia is the scalpel, the retort and the microscope. He is the pathological surgeon. When Rosenow produced specific diseases with specific tonsil extracts, he was the unwitting harbinger of this new being. Guided and inspired by the great minds which have gone before us, governed and restrained by this new individual of superior collective mental attainments, forgetting personal aggrandizement and self-glorification, appreciative of encomium where encomium is due, oblivious to the scathing and withering denunciation which appears to be a part of our lot, ophthalmology, in felicitious concert with her sister branches, will go forward, with cheerful and self-reliant step, over its arduous and thorny road, to the end that the condition which I have reported here today will be anticipated and prevented, rather than appreciated and cured; and man shall, in some small part, at least, assist the Creator in working out his own immortality.

ACUTE ANTERIOR POLIOMYELITIS.*

By CHARLES F. GRAHAM, M. D., Wytheville, Va.

I have no conception by the furthest stretch of the imagination why the Program Committee should have selected me as one of the men to open the discussion on Infantile Paralysis, unless it was their idea to start with the weakest man and build up.

In my reading on this subject I find one of our leading medical schools classifies Infantile Paralysis as essentially an orthopedic disease, taking the view that few cases are diagnosed prior to paralysis. In the last few years the aim has been to make an early diagnosis and give treatment before paralysis, thereby either preventing or greatly lessening the number of cases having paralysis.

Diagnosis

The usual symptoms are fever; gastro-intestinal disturbances; irritability; and pain in back of neck, back, arms or lower limbs. The physical signs usually first encountered are stiffness of the neck, and rigidity of the back, the stiffness and rigidity being really a reluctance to flexion, rather than an inability, due to pain. In cases presenting above symptoms lumbar puncture should be made. The spinal fluid is, under varying degrees of pres-

*Read before the Southwestern Virginia Medical Society, at Radford, Va., March 24-25, 1930.

sure, clear or slightly turbid; shows an increased cell count and increased globulin. Some authorities claim the increased cell count and globulin bear a direct index as to the extent and severity of the ensuing paralysis.

Treatment

First and foremost in the early treatment is spinal puncture, repeated at twenty-four hour intervals until pressure is normal. If convalescent serum can be obtained, it should be administered immediately intraspinally and intramuscularly. The intravenous route is recommended in most of the literature, but is apt to give severe reactions. I am informed on good authority that in the Manitoba and Roanoke epidemics the intramuscular route was found as good as the intravenous, if not preferable.

Following this specific treatment, quiet and absolute physiological rest in bed are paramount and must not only be urged but maintained. If any signs of paralysis develop, the muscle groups involved should be supported with a view to lessening the permanence of the paralysis. Of course the usual hygienic measures and diet of an acute infectious disease should be carried out, isolation and quarantine strictly maintained, since Infantile Paralysis has been proven beyond the shadow of a doubt to be a communicable disease.

With these purposely brief remarks on diagnosis and treatment and craving your indulgence I shall depart from the customary rule of reading a more or less didactic paper on this subject, which material you may get out of the various journals and books, and give you the case reports on three of the five or six cases it was my fortune or misfortune to be associated in the treatment of last summer.

Case I.—A negro boy three and a half years old, while playing on the floor, suddenly had a convulsion. During the convulsion the child passed a worm. Worm medicine was administered. That night and the next morning, to put it in the words of the baby's grandmother, "it passed a bushel of worms and seemed a great deal better." The next day they noticed the child did not walk well and would not use its right arm. On examination, the following was ascertained: Pulse normal; temperature normal; respiration normal. The child was fretful and did not wish to be examined but did not cry. Neck moderately rigid, back slightly rigid and child resisted flexion. Kernig sign present, knee jerks sluggish. There was a total loss of use of muscles of right arm, and partial loss in right forearm and right leg. History elicited the fact that in addition to the worm episode the child had had an attack of nausea and vomiting, with diarrhoea and fever, eight days prior to the development of the paralysis. Diagnosis of infantile paralysis was made, and confirmed by three other physicians. Family refused lumbar puncture. As case was considered in latter stages, same was not urged. Absolute rest for one month was ordered. At the end of this time the child had apparently regained the use of right leg and forearm but some paralysis was still noted in arm. At the present writing this case seems to have almost entirely recovered.

Case II.—A young white boy thirteen years of age was brought to my office by his father, who noticed he carried his head as if his neck and back were stiff. He gave a history of having fallen from the running board of a car five days before, hurting his left side just above the crest of the ilium. The next day he had run some fever and, following a dose of oil, seemed normal.

Pulse 120; temperature 102; respiration normal. Examination showed boy to have a very stiff neck and back, and attempt at flexion elicited pain. Knee jerks slightly exaggerated, especialy right side. Kernig sign present.

Patient taken home and lumbar puncture made. Spinal fluid was clear and came out under greatly increased pressure. Specimen taken to laboratory. White cell count 85; red cell 25; globulin test + 3.

Convalescent serum administered intramuscularly only, as family refused same to be given intraspinally. In twenty-four hours second lumbar puncture made. Spinal fluid was slightly cloudy and under greatly increased pressure. Pulse 120; temperature 104; respiration normal. The boy was restless, irritable, anxious and complained of headache. Second dose of convalescent serum administered.

In twenty-four hours third lumbar puncture made. Spinal fluid was slightly cloudy but under less pressure, by about half of what it had been two previous days. Pulse 102; temperature 101; respiration normal. Slight paralysis had developed in right leg and thigh.

XUM

In twenty-four hours fourth lumbar puncture made. Spinal fluid clear and under normal or very slightly increased pressure. Pulse 90; temperature 99; respiration normal. Paralysis more marked in right leg and thigh, and patient could not lift head off pillow. Slight paralysis left leg and thigh and abdominal muscles and in back. In about two weeks paralysis of back, neck, left leg and thigh muscles cleared up a great deal; abdominal and right legs and thigh remained. About one month later an orthopedic surgeon found about the same condition to exist.

At present this patient gets about, with definite difficulty remaining in right leg and thigh, but is able nevertheless to ride his bicycle about town.

Case III.—About midnight a physician was called to see a girl of fourteen who had been taken suddenly with nausea and vomiting, and an excessive menstrual flow to the extent of flooding. Patient had no fever. Gave no history of having missed her menses, and it was time she was due. Ergot was administered and patient directed to remain in bed several days.

About thirty-six hours later, another physician saw the case and found patient to have temperature, rapid pulse, and, when she sat up in bed to bend over, she would faint and complained of pain in back, severe headache and light hurting eyes. Neck was not stiff and Kernig was absent. Knee jerks were exaggerated. The next day I saw patient with her second physician. She had about the same symptoms as day before but more exaggerated and ankle-clonus was present, also complained of pain in right shoulder extending down arm to elbow.

Lumbar puncture was decided upon. The spinal fluid was clear and under greatly increased pressure.

Laboratory report showed white cell count 25; red cell 20; and globulin + 3. Convalescent serum was administered intramuscularly.

The next day the patient seemed greatly improved and went on to an uneventful recovery. She had a slight inability to use her right arm a short time and complained of it being weak but no definite paralysis appeared.

In about six weeks an examination by an orthopedic surgeon could not disclose the slightest signs of paralysis.

Of the three other cases mentioned, one died and the other two had apparently a complete recovery.

SUPPURATIVE ARTHRITIS DUE TO HEMOPHILIC BACTERIA.

By FREDERICK W. SHAW, M. D., Richmond, Va.
Department of Bacteriology and Clinical Pathology, Medical College of Virginia.

Suppurative arthritis due to hemophilic bacteria of the influenzal type is a rare disease; the writer was able to find but fourteen cases reported in the literature, and of this number two were from Canada and none from the United States.

On account of the rarity of the disease a brief summary of the cases is given.

In 1899 Slawyk[13] isolated the influenza bacillus from the lesions of a child of nine months with an abscess on the dorsum of the hand and arthritis of the ankle; death occurred from general infection and meningitis.

In 1903 Mya[10] recovered a similar organism from the purulent fluid of arthritis of the shoulder-joint in a child one year of age. Death followed a meningitis.

In 1907 Dudgeon and Adams[4] reported a baby with suppurative arthritis of the left elbow and right hip joints, from the pus of which they isolated a hemophilic organism conforming to the Pfeiffer bacillus. The infant died from meningitis.

Fraser,[6] 1911, obtained a similar organism from suppurative arthritis of the knee, in a child of six months. The joint was opened and drained; complete recovery followed.

Nabarro and Stallman,[11] in 1923, obtained Pfeiffer's bacillus from three cases of purulent arthritis of the knee in children. One child died, the other two recovered.

In 1925 Harris[8] records the finding of this bacillus in two cases of suppurative arthritis of the knee in children.

Influenzal meningitis and sepsis with abscess of the knee-joint in a child aged one and one-half years was reported by von Gavel[7], in 1926.

In 1927 Taylor[14] reported three cases of suppurative arthritis from which he isolated Pfeiffer's bacillus. The first case was that of an infant seven months of age and involved the right hip joint with caries of the head of the femur. Recovery eventually took place. The second case occurred in an eighteen months' infant, from the joint of whose left knee was aspirated semi-purulent fluid. This

fluid showed a hemophilic Gram-negative bacillus in pure culture, identical to case No. 1. The third case was that of an eight months' old infant with hot tender swelling of the lower part of the left thigh. The temperature, at this time, was 102 F. The X-ray showed no bony change. Four days later the swelling had extended to the knee. The joint was opened on the inner side, and several ounces of fairly yellow pus evacuated. The pus showed organisms similar to the first and second cases. The temperature reached a normal level after ten or twelve days. This case died from erysipelas.

In 1928 Vogelsang[15] recorded a case of pyemia caused by the influenza bacillus and associated with acute meningitis and arthritis.

The causative organism in all of the above cases was a minute, Gram-negative, non-hemolytic, non-motile, hemoglobinophilic bacterium.

Relative to the members of the above group of hemoglobinophilic bacteria, Park, Williams and Krumwiede[12] state: "There are a number of bacilli which differ slightly in morphology and growth from the characteristics of the typical influenza bacillus. These were grouped under the name 'pseudo-influenza bacilli.' For example, the influenza-like bacilli found first in whooping-cough by Jochmann and others. Müller's trachoma bacillus, Koch-Weeks' bacilli, the bacilli found by Cohen in meningitis, and those reported occasionally in other parts of the body—all of them seem to be so closely related that they should be considered one species or, at the most, varieties of one species until more specific characteristics can be demonstrated."

Dible[3] separated the hemophilic bacteria found in the throat into three groups: (a) hemolytic; (b) non-hemolytic but with a tendency to produce long leptothricoid threads; (c) non-hemolytic, strictly hemophilic, give uniform turbidity in fluid media, appear in films as minute bacilli or coccobacilli, produce sharply outlined lenticular colonies. He considers that only group (c) should be called Bacillus influenzae Pfeiffer.

Cohen[2] found that strains isolated from cases of meningitis were more toxic to animals, and that they tended to kill more frequently by septicemia than those isolated from the respiratory tract. He further stated that animals could be protected against meningeal strains by inoculation with such strains, but that respiratory strains did not so protect. He used this as a basis for differentiation of species.

Evans[5] working with twenty-seven strains from various sources (twenty from sputum, four from spinal fluid, two from pleural fluid and one from a nasal culture) found seven of the sputum strains, all of those from the spinal fluid, one from the pleural fluid and the one strain from the nasal culture to be virulent. There was no correlation between virulency and indol production in the sputum strains. The virulent strains from the other sources produced indol.

Yabe[16] divided the influenzae bacilli into two groups by indol. He stated that it is impossible to divide them into groups by morphological and immunological study.

Maitland and Cameron[9] examined a large number of strains as to agglutination and agglutinin-absorption. They considered that while a few strains showed common properties, in these respects, the great majority only reacted with their homologous sera.

Chesney[1] studied twelve strains from adults during the course of influenza. Cross-agglutination-absorption tests showed that four of them were identical. No evidence of relationship to strains obtained from another source was encountered. The author considered that the influenza bacillus is a representative of a heterogeneous group of hemophilic bacteria.

It may be seen from the citations above that there are no criteria at present to distinguish the hemophilic, non-hemolytic, minute, Gram-negative bacilli isolated from various sources.

Report of Case.—A child one year of age was first noticed not to crawl as usual on the 12th of September, 1929. Some swelling was noted just above the right knee. This was followed by swelling of the whole right leg. The leg was tender to manipulation, and to pressure above the knee. Several pockets of pus were present around the lower end of the femur and around the knee-joint. X-ray showed no bone lesion in the femur or knee. On operation pus was recovered from the joint. The blood showed: W. B. C. 36,000, polynuclears 80 per cent, lymphocytes 20 per cent. The temperature varied from 99 to 102 F. At operation the lower three inches of the femur appeared honey-combed. The patient was free from fever when he left the hospital on October 17, 1929.

XUM

From the pus from the several localities, a minute, hemophilic, non-hemolytic, Gram-negative bacillus was grown. It was the only organism present in the cultures, and was non-virulent for rabbits on intravenous injection. Smears from the pus showed a minute, Gram-negative bacillus. After a few subcultures, this organism died out, as did those of Taylor (loc. cit.) and Fraser (loc. cit.)

The similarity between the case herein reported and the third case in Taylor's report is quite remarkable.

As Taylor mentions, these cases show one common feature, that the patients (and the one now reported) were all children. Otherwise they fall into two groups: (a) suppurative arthritis, only; (b) suppurative arthritis with fatal pyemia and meningitis. In group (a) the patients recover from the infection and the joints recover their function.

From a perusal of the foregoing cases it is obviously impossible, by present methods, to differentiate morphologically, culturally and immunologically between the organisms isolated from these cases, and the Bacillus influenzae Pfeiffer.

My thanks are due to Dr. L. E. Sutton, Jr., for the clinical notes of the case reported herein.

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TULAREMIA IN VIRGINIA—1929.

By HARRY G. GRANT, M. D., Richmond, Va.
Epidemiologist, State Health Department.

In 1929 sixty-nine cases of tularemia were reported to this office. There were six deaths. This is a marked increase over 1928, in which year there were twenty-four cases reported, with two deaths. The map shown below gives the locations of these cases:

On forty-two of the cases reported the practicing physicians very kindly filled out a detailed description and forwarded to us. An analysis of these case histories is shown below:

TULAREMIA CASES, 1929

Number of Cases Studied, 42

I. BY SEX:
Males____21 Females____21 Total____42

II. BY COLOR:
White____35 Colored____ 7 Total____42

III. BY AGE GROUPS:

Under 20 years	4
21-29	7
30-39	12
40-49	4
50-59	10
60-69	5
Total	42

IV. OCCUPATION:

Farmer	10
Housekeeper	18
Foreman, telephone line gang	1
Merchant	2
School children	2
Laborer	2
Outside attendant, W. S. Hospital	1
Servant	1
Mail carrier	1
Postal clerk	1
Car builder	1
Mechanic	1
Garage man	1
Total	42

V. TEMPERATURE:

Range (highest): 100 to 101.9	102 to 102.9	103 to 103.9	104 to 104.9	105 to 106	Not Stated	Total
3	4	16	10	5	4	42

Duration:

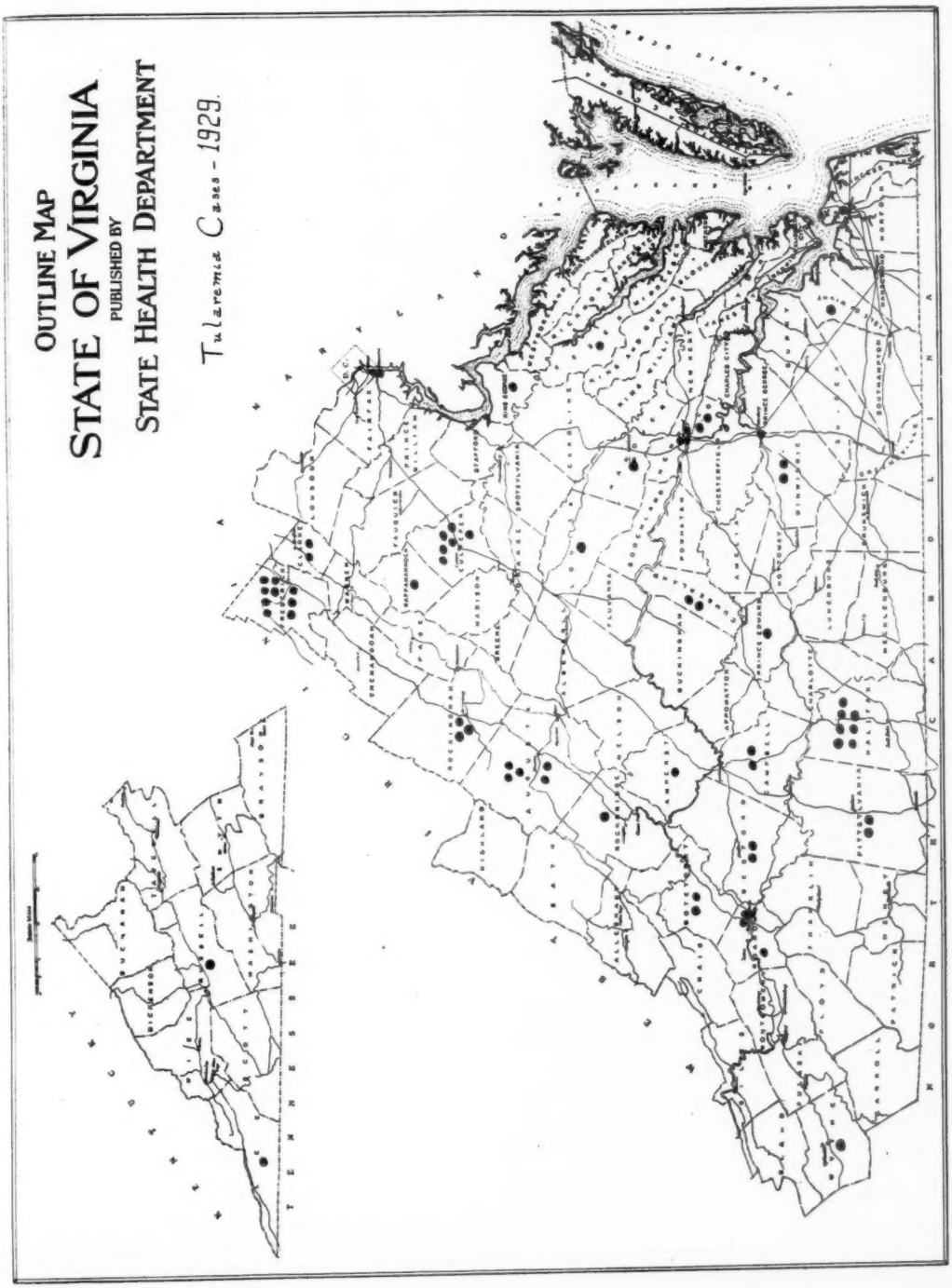
1 week	4
2 weeks	5
3 weeks	9
4 weeks	4
5 weeks	1
Not stated	19

VI.

Handled rabbits	40
Handled squirrels	1*
Bitten by tick	1
Had not handled rabbits or squirrels, and had not been bitten by tick	1

VII. Length of time before appearance of symptoms that patient had handled rabbits, squirrels or been bitten by tick:

2 hours before	1
1 day before	9
2 days before	5
3 days before	10
4 days before	3
5 days before	2
6 days before	0


OUTLINE MAP
STATE OF VIRGINIA
PUBLISHED BY
STATE HEALTH DEPARTMENT
Tularemia Cases - 1929.
TENNESSEE
NORTH CAROLINA

7 days before	1
8-10 days before	3
14 days before	1
5 weeks before	1
Not stated	5
(Had not handled rabbits, squirrels, or been bitten by tick	1)
Total	42

*This patient also handled rabbits and is included in the 40 recorded above.

VIII. TITRE:

1-40	1†
1-80	2
1-160	7
1-180	1
1-320	4
1-640	7
1-1240	1
1-1280	10
1-2560	2
1-5120	1
Negative	1
Unknown	2
None done	3
Total	42

†This case was classed as tularemia on account of clinical manifestations.

The histories of the reported cases show usually that the patient had been shooting rabbits or skinning rabbits, and had accidentally cut a finger. Following this were symptoms of a moderately severe infection and then the appearance of a local indolent ulcer. Glandular enlargement was usually present; severe headache and in a few cases skin eruptions were noted. Conjunctivitis was present in two cases. Broncho-pneumonia complicated several of the cases, as also did acute pleurisy.

This department wishes to thank the many physicians who forwarded the information from which this study is prepared.

Correspondence

Proposed Amendments to Constitution and By-Laws of Medical Society of Virginia.

Victoria, Va.,
August 14, 1930.

TO THE EDITOR:

I submit the following as proposed amendments to the Constitution and By-Laws of the Medical Society of Virginia to be voted on at the meeting of the Society in October of this year.

Very truly yours,

E. L. KENDIG.

PROPOSED AMENDMENT TO THE CONSTITUTION

New portions indicated by italics.

Have new Article incorporated in the Constitution, on page 3 just after Article VIII, as follows:

ARTICLE IX. *Trust Fund for Post-Graduate Clinical Education.*

The last five living ex-presidents shall constitute a special committee to collect and hold in trust the post-graduate fund of the Society.

Renumber following articles of Constitution, advancing numbers by one.

PROPOSED AMENDMENTS TO THE BY-LAWS

ARTICLE VIII. Near the end of page 23, add a new Section to be known as Section 8 to read as follows:

Section 8. The special committee of ex-presidents shall each year elect one of their members as chairman. The executive secretary shall act as secretary. The committee shall be active in securing subscriptions to the trust fund of the Society for post-graduate clinical education. This committee shall receive all contributions to this fund, contract with a good trust company for the investment of same in good securities, and each year pay to the department or committee in charge of clinical education the interest and other revenues accruing from the investment of this fund.

ARTICLE IX—DUES

Section 1. There shall be an annual assessment of $5.00 upon each member. These dues for each calendar year shall be made in one payment and are payable before December 31st of each year. Members joining the Society after June 30th shall be assessed $2.50 for the remainder of that fiscal year.

The principal of the trust fund for post-graduate clinical education shall remain in trust and the interest and other revenues accruing from the investment of this fund shall be used by the department or committee in charge to help defray expenses of post-graduate clinical education. Members who have subscribed as much as $250.00 to the Trust Fund for post-graduate clinical education shall thereafter be exempt from payment of annual dues.

President's Message

Lunch Meeting for Secretaries of Local Societies.

At the last meeting of the Medical Society of Virginia our House of Delegates decided to try out a plan for post-graduate education which would be of service to every member of the Society who desired to make use of it. To put this plan into effect the Department of Clinical Education was established and various forms of post-graduate work have been tried.

As President of the Medical Society of Virginia it is my duty not only to help put over this program, but also to look at it from all sides and criticize it in a constructive way. The first thing that I had to investigate was what form of clinical education already existed within the state, and what possibility there was of making use of the already existing facilities to benefit the largest number of members. I discovered that excellent programs were being put on by local or group societies, but that our membership as a whole had no way of knowing what these programs were. It was just another case of the waste of good material on account of lack of cooperation. The local societies are all glad to have visitors from the outside take part in their meetings, but visitors have generally no way of knowing what the programs are.

The first step towards obtaining this needed cooperation is to get the officers of our local societies into closer touch, especially is this true in regard to the secretaries who generally hold office for a considerable number of years, and who frequently are really the active officers of the societies. If we can only get hearty, contiued cooperation between the secretaries of the local societies and the Secretary of the Medical Society of Virginia, we will open the way for furnishing our whole membership with the facilities for clinical education, which are now enjoyed by the few.

I am, therefore, again calling the attention of the local secretaries to the plan which Miss Edwards has suggested for getting them together, in order to secure this needed cooperation,—a luncheon to be held on Wednesday, October 22nd. Every secretary of a county or group society should be present at this meeting, at which time it may be thought expedient to establish a permanent organization, as a mid-year meeting may possibly be found desirable in the future.

Miss Edwards will write a personal letter to the secretaries inviting them to this meeting, but I feel it is wise to give them warning ahead of time, as I believe that a great deal of good should come from this organization.

Program for House of Delegates.

The other day I received a letter asking that I would try to arrange the program of the Medical Society of Virginia so that the members of the House of Delegates would be able to attend more of the scientific meetings. This has always been the purpose of the Medical Society of Virginia, which has attempted to get through its business before the scientific meetings of the Society. But business seems to have increased, and the meetings have been in conflict. I feel, however, that we might be able to finish the meetings of the House of Delegates more promptly if its members would get the business which they want considered into concise form and have it put down on paper, preferably in type. This applies especially to the reports of committees, delegates, etc. If these are arranged well in advance, it is almost certain that they can be cut down without really detracting from their contents.

Another thing which always helps is getting to meetings promptly, and I can assure you that I will be on time, and will call the meetings to order on time.

CHARLES R. GRANDY, M. D.,
President, Medical Society of Virginia.

XUM

Department of Clinical Education

OF THE MEDICAL SOCIETY OF VIRGINIA

Continuation Education for Practitioners.

During these summer months, plans have been developing and work is being outlined for the coming Fall and Winter by the Department of Clinical Education.

Some valuable information has been gained during the past months which will be utilized in the future.

Most notable among the lessons learned have been the following:

First, that the most instructive and acceptable meetings have embraced CLINICAL FEATURES;

Second, that in addition to the papers by local practitioners, the addition of at least one or two practiced teachers to the program made the meetings more interesting and attracted larger audiences;

Third, that an afternoon and an evening session were more satisfactory and instructive;

Fourth, that a social session with a dinner or supper, paid for individually, was very popular;

Fifth, that there is a strong and growing demand for Clinical meetings that would feature, in addition to scientific papers by the local society members, demonstrations or dry clinics by selected local members or visiting teachers upon the following subjects:

(a) Newer remedies and procedures, demonstrating actual methods employed, especially in the treatment of children and adolescents;

(b) Demonstrative methods of personal prevention and protection of individuals from such diseases as diphtheria, typhoid, tuberculosis, etc.;

(c) Clinical exhibition of some of these newer methods in patients showing the different stages of immunization, especially in children;

(d) The importance at each meeting of clinically demonstrating some new phase of obstetrical practice, or some of the newer and better methods of pre-natal and post-natal care of patients;

(e) The increasing necessity for studying didactically and clinically at each meeting the local diseases prevailing at that season in the immediate section; and

(f) Whenever possible, the importance of devoting at least a one or two hour period to the study and treatment of one or more of the diseases of childhood;

Sixth, that there is an increase of interest in personal health examinations; and,

Seventh, that the generally increasing interest in continuation education for practitioners will soon demand a full two-day clinical and scientific meeting in at least each of the ten Councilor districts during each year, in addition to the usual county and group meetings now being held.

These wishes of the profession will be met and fulfilled by the Society's educational agency, the Department of Clinical Education, as speedily and efficiently as possible. This Department desires to serve the membership in every way possible. Call upon it freely—it always cooperates, but never dictates.

Some Fine Suggestions

The appended letter just received is much appreciated and is printed in full, for it is as practical as it is suggestive and shows a splendid spirit of cooperation in professional progress:

I am going to write you about the clinics the Medical Society, through the Department of Clinical Education, together with the State Medical Schools, is holding over the state. In my contact with some of the medical profession, I find that a number of them would be glad to have some help on the practise of preventive medicine.

Do you not think it would be a good thing for you to make a place on the program for having clinics showing the doctors taking your courses just what the Schick test looks like and just how it is performed? Would it not also be a good thing to give toxin-antitoxin to a group of children several days before to show the doctors just what types of reactions you get from toxin-antitoxin? The few bad effects there have been from several lots of toxin-antitoxin should be explained to the doctors so they can answer any criticisms along these lines. The importance of the doctors giving toxin-antitoxin to all the children among ther clientele before they are a year old and the reasons for not giving them toxin-antitoxin before they are six months old should be carefully explained.

The great advantage to the individual, as well as to the community, in vaccinating children against smallpox in the early months of life should also be discussed. As you know, a young child gets a much less severe reaction from smallpox vaccination than

an adult and then they are protected against smallpox, and any subsequent vaccination they have to bring their immunity up will cause very little local or general reaction. Along this line the technique of the Leake method of vaccination should be shown the doctors and the importance of leaving the point of vaccination uncovered emphasized.

In addition to the above mentioned subjects, the health examination ought to be taken up and discussed and put into practice in the local clinic. One important thing to be brought out at this time would be what is a deviation from the normal and what advice or treatment are you going to give a man who has this or that deviation. It is my impression that the doctors are really more at a loss on the subject of advice than they are on the subject of actually making the health examination.

This letter is necessarily brief and many other things would come up in actually working out these two ideas—the idea of the protection of the individual by different forms of vaccination, and the periodic health examination to determine danger signs before the individual himself is conscious of the approaching condition.

Yours sincerely,

FRED. J. WAMPLER, M. D.,
Professor of Preventive Medicine.
Medical College of Virginia.

Aug. 13, 1930.

Scheduled Meetings

——On *Saturday, September 20th*, the Clinch Valley Medical Society, Dr. J. B. Wolfe, Coeburn, President, will hold its Fall meeting at Norton, Va.

——On *Tuesday, September 30th*, beginning at 2:00 P. M., a scientific and clinical meeting will be held at the time of the dedication of the new Medical Arts Building in Petersburg, under the auspices of the Post-Graduate Medical Society, Dr. Joel Crawford, Yale, President.

——On *October 2nd, 3rd, and 4th*, the University of Virginia will give a course of Post-Graduate clinics, along the lines followed in the past.

——On *Tuesday, November 18th*, beginning at 2:00 P. M., a clinical and scientific meeting will be held at Burkeville with Dr. W. H. Venable, Superintendent and Medical Director of the Piedmont Sanatorium, and the Post-Graduate Medical Society, cooperating.

Information

All members of the State Society are requested to write for any information desired on any subject relative to these Extension Courses in Graduate Medical Education, either to the Acting Executive Secretary, Mr. George W. Eutsler, P. O. Box 707, University, Va., or to the Chairman of the Department of Clinical Education, 5 East Franklin Street, Richmond, Va.

Miscellaneous

Practical Rules for Mental Health.

1. Neither run away from emotions nor yet fight them. It is like guiding spirited horses—you guide, they obey, not their own impulses, but your will.

2. Be efficient in what you do. In short, do not drive your tasks with a sledge hammer. There is a better, less fatiguing way. Find out how easily you can do things well, and take pride in such skill.

3. Do one thing at a time.

4. Make clean-cut practical decisions. Finally, decisions must be valued, not as irrevocable oaths or unretractable contracts, but as mere decisions, subject to change in the face of new facts or additional knowledge.

5. Do not accept hurry as a necessary part of modern life. Quality of work, not quantity, spells success, and quality is destroyed by hurry.

6. The worst enemy of efficiency, as well as the best ally of nervousness, is worry. Worry is a complete circle of inefficient thought whirling about a pivot of fear. To avoid it, consider first whether the problem at hand is actually *your* business. If it is *not*, turn to something that is. If it *is* your business, decide next whether it be your business *now*.

7. Keep work, play, rest, and exercise in their proper relative proportions; not only in the space of decades, but year by year, month by month, week by week, and day by day. Such a life absorbs emergencies without strain.

8. Shun the New England conscience.

9. Energy is often wasted by a peculiar process which many people seem to think necessary before they can do anything, especially anything that promises to be difficult. When a decision has been reached, when something has to be done, *waste no time in mobilizing extra energy*, just *do* it.

10. Lastly, to avoid breaks in character, breaks between your ideals and your everyday actions, recognize that your problem is fundamentally the same as every one's else, no matter what your particular job may be. Do not criticize your part in the play; study it, understand it, and then *play* it, sick or well, rich or poor, with *faith*, with *courage*, and with proper *grace*.

From Burnham: "The Normal Mind."

XUM

Mind and Body—One and Inseparable.

Man is neither wholly Body nor wholly Mind—he is both—one and inseparable.

The Etiology of Diseases is neither wholly Physical nor wholly Mental—it is both—one and inseparable.

The Course of Diseases is neither wholly Physical nor wholly Mental—it is both—one and inseparable.

The Termination of Diseases is neither wholly Physical nor wholly Mental—it is both—one and inseparable.

Therefore—Treatment of Diseases is neither wholly Physical nor wholly Mental—it is both—one and inseparable.

The Physical or Chemical treatment not only helps the Body, but also the Mind. The Mental or Psychical treatment not only soothes the Mind, but also the Body.

The Doctor must not only be a Physiologist, but also a Psychologist.

The lack of this knowledge or not putting such knowledge in practice feeds the so-called irregulars or quacks. They are our children. We are their fathers.

In Practice—"Think ye upon these things."

J. E. Rawls, M. D., F. A. C. S., Suffolk, Va.

Proceedings of Societies

The Patrick-Henry Medical Society

Held its regular quarterly meeting at Patrick Springs Hotel, July 12, 1930. After a delightful dinner at the Hotel dining room, the meeting was called to order by the President, Dr. W. C. Akers, of Stuart. The following delegates were appointed to the State Society:

Patrick County: Dr. J. T. Shelburne, delegate, and Dr. W. C. Akers, alternate.

Henry County: Dr. C. W. Thomas, delegate, and Dr. G. B. Dudley, alternate.

Following the business meeting, Dr. J. T. McKinney, of Roanoke, gave a very delightful and instructive lecture on "X-Ray Diagnosis of Diseases of the Gastro-Intestinal Tract." Dr. J. M. Shackelford gave a very interesting talk on "The Acute Abdomen." Both topics were well discussed by all members present, and much benefit derived therefrom.

Dr. W. N. Thompson, of Stuart, is secretary of this society.

The Augusta County Medical Association

Held its annual social and business meeting at the Western State Hospital, Staunton, August 6th, under the presidency of Dr. Richard P. Bell, of Staunton. There was an attendance of twenty-three. The following were elected officers for the coming year: President, Dr. John E. Womack, Staunton; vice-presidents, Drs. Q. H. Barney, Mt. Sidney, Charles W. Putney, Staunton, and William Lueders, Jr., Staunton. Drs. T. M. Parkins, Staunton, and W. F. Hartman, Staunton, R. F. D., were re-elected treasurer and secretary, respectively. Dr. C. P. Obenschain, Staunton, was elected censor. Drs. R. P. Bell and J. S. DeJarnette were named delegate and alternate, respectively, to the Norfolk meeting of the State Society.

Dr. J. S. DeJarnette, Superintendent of the Hospital, gave a clinic on Sterilization, following which the members were guests at supper.

The Medical Society of Northern Virginia

Held its regular meeting at Front Royal, Va., on August 13th. There was a good attendance, including a number of visitors. Among those on the program were: Dr. H. Grant Preston, of Harrisonburg, Drs. L. T. Stoneburner and E. L. Flanagan, of Richmond, and Dr. H. I. Pifer, of Winchester.

Dr. F. C. Downey, of Edinburg, and Dr. J. E. Harris, of Winchester, are president and secretary, respectively, of this society.

The Loudoun County Medical Society,

At its reguiar meeting on August 12th, endorsed the Director of Health's wish to establish a sanitation officer in Loudoun, and enumerated twelve points to be discussed at the State Society meeting in October.

Dr. G. F. Simpson, Purcellville, is president, and Dr. W. O. Bailey, Leesburg, secretary of this Society.

Northern Neck Medical Society.

Notice has just reached us that at the semi-anual meeting of this Society, October 31, 1929, Dr. George H. Steuart, Ottoman, Va., was elected president, and Dr. R. E. Booker, Lottsburg, Va., secretary.

Woman's Auxiliary, to the Medical Society of Va.

Study Programs for County Auxiliaries.

Beginning with the May issue of the Monthly, we have been publishing the Study

Programs for County Auxiliaries which were prepared for the Woman's Auxiliary to the American Medical Association. These programs especially consider Physical Defects in Children. The various subjects discussed to date are *Nose and Throat*, *Ears*, *Eyes*, *Teeth*, *Underweight and Malnutrition*, and *What is Being Done by Health Agencies, Official and Unofficial, for the Discovery of Physical Defects in Children.* The following is a continuation of the discussion:

(*Continued from page* 265)

Examples of State Health Department Efforts to Get Correction of Discovered Defects

Experience has shown that only a small percentage of such defects are corrected by parents when their attention is called to them. Health departments, therefore, are forced to exercise their ingenuity to find effective means of inducing parents to meet this responsibility; and when that fails, to interest the child himself in getting his handicaps removed.

The Five, Six and Nine Point Child campaign is proving successful in a number of states.

The Missouri State Health Department's Six and Nine-Point Child work is getting excellent results. Dr. Irl Brown Krause, Director of the Division of Child Hygiene, about three years ago, called upon all state organizations interested in child welfare to cooperate with him in a state-wide Six-Point Child Campaign. Representatives of all such organizations were called to Jefferson City for a conference, at which the following plan was worked out:

There was, as rapidly as possible, to be organized in each county a county Six-Point Child committee, made up of the representatives of all the organizations interested in child welfare which functioned in the county.

This committee was to secure a chairman in each school district whose duty would be to get in touch with the school authorities and school teachers, and arrange early in the school year for the examination of all school children by competent physicians, approved by the county medical society. Defects found were to be reported to parents. Toward the end of the school year every child who was found to have normal eyes, ears, nose and throat, teeth, weight and posture, or who, having had defects in any of these six points, had had the defects corrected, was to receive as a part of the May Day Child Health day celebration, a six-point button from the health department.

In addition to this the child who had a birth certificate received a blue ribbon, and if he had been immunized against smallpox and diphtheria he received a red ribbon to attach to the button, which then classified him as a nine-point child.

At the conference it was the general opinion that great results were not to be expected the first year, but all agreed that if the work got a good start in fifteen or twenty counties they ought to be quite satisfied.

The following shows how the simple device of the button and badge has produced results:

Missouri's Totals for Past Three Years

1927—6	point children	10,768
9	point children	4,675
	Total	15,443
1928—6	point children	12,694
9	point children	11,576
	Total	24,270
1929—6	point children	15,830
9	point children	16,247
	Total	31,077

From Dr. Krause we have the following: "The Jefferson City schools are a splendid example of what can be accomplished through intensive work. There are about two thousand children in the public elementary schools and in 1927 only sixty-six of them reached the Six-Point requirement and not a single child met the Nine-Point requirements. In 1929, 503 children met the Six-Point requirement and 209 won the Nine-Point badge. I think that is about as startling an improvement as we have to show in any of the communities.

"Naturally, the work is very much more effective if followed up by trained public health nurses, and we have found from past experience, where we are able to have the local physicians and dentists to conduct the examinations under the leadership of some local club such as the Woman's Auxiliary to the Medical Society, the Parent-Teacher Associations, etc., that much interest has been aroused for permanent health work and frequently the program has resulted in a request for a whole time health worker. We furnish examination record forms and health literature free to any community desiring it and we feel that it is an

activity which can be promoted by the local clubs even though there are no paid health workers in that community."

The following illustrates vividly the difference in results in Missouri communities where there was intensive work done by local agencies, and communities where no such work was done:

WHERE SIX-POINT WORK WAS PROMOTED

County	No. Children Examined	Per Cent Defects Corrected
Boone	4,881	21%
Jackson	7,857	32%
St. Francois	6,578	18%
Mississippi	3,828	19%
Scott	3,753	14½%
Cole	4,890	31%
Average Correction		22½%

WHERE NO GREAT EFFORT WAS MADE TO PROMOTE 6 PT. WORK

St. Louis	3,827	6%
Dunklin	4,810	6½%
New Madrid	2,264	8½%
Pemiscot	2,961	2%
Buchanan	2,528	5%
Average		7%

Dr. Ennion G. Williams, State Health Commissioner of Virginia, reports:

We have been inspecting school children for nearly nine years, and the number of children inspected, the number of Five-Point children and the number of corrections have steadily increased each year.

In 1927 we started more actively the Five-Point Program with the following results:

Session Ending June:	1927	1928	1929
Children Enrolled	447,945	508,098	571,013
Children Inspected	403,423	478,498	422,239
Corrections:			
Vision	7,188	9,909	10,242
Hearing	1,851	2,159	2,360
Teeth	40,124	61,540	66,219
Throats	4,051	8,391	10,761
Weight	22,921	35,260	46,584
Total	76,135	117,259	136,166
Five-Pointers	7%	14%	21%

Dr. J. C. Montgomery, Director of Child Hygiene of Kansas State Board of Health tells us: "The Nine-Point Program was started in 1927. Last year over 5,000 'Nine-Point Children' were reported. In one county (Cherokee) in the past two years they have held annual picnics, and all 'Nine-Pointers' are given a big time. Last year 1,500 were guests of Cherokee County. In our eleven county units the securing of 'Nine-Point' children is one of the important activities of the department. A number of counties reported from 25 to 200 in 1928."

The Kansas Button is a large sunflower with nine of the yellow petals named: Vision, hearing, teeth, throat, weight, posture, toxin—anti-toxin, smallpox vaccination, and typhoid immunization.

The Truth About Medicine

In addition to the articles enumerated in our letter of June 28, the following have been accepted:

Aces Laboratory, Inc.
  Mercurochrome Suppositories Aces.
Cutter Laboratory
  Diphtheria Toxoid—Cutter, 45 c.c. vial.
Hoffmann-LaRoche, Inc.
  Synthetic Thyroxine
    Ampuls Synthetic Thyroxine—Roche, 1.1 c.c.
    Solution Synthetic Thyroxine—Roche.
    Tablets Synthetic Thyroxine—Roche, 1 mg.
Winthrop Chemical Co.
  Mesurol
    Ampules Emulsion Mesurol, 20 per cent, 1 c.c.
  Theocin
    Tablets Theocin, 1½ grains.

New and Non-official Remedies

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Non-official Remedies:

Alphanaphthol.—The actions of alphanaphthol resemble those of betanaphthol. The literature is rather contradictory and unsatisfactory as to the relative toxicity, but it is probably of a similar order. Alphanaphthol is employed locally as an antiseptic and germicide; it is not generally used internally.

Alpha Naphco.—Compound Solution of Alphanaphthol.—Alpha Naphco contains alphanaphthol 10 Gm., glycerin, 32 Gm., soft soap, 23.8 Gm., water to make 100 Gm. When tested against *B. typhosus* by the U. S. Hygienic Laboratory method, alphanaphco has a phenol coefficient of 1.46. Carel Laboratories, Redondo, Calif.

Pyridium. — Phenylazo-2-6-diamino-pyridine monohydrochloride.—The monohydrochloride of an azo dye of the pyridine series, phenylazo diamino pyridine. Pyridium has marked penetrating power and is non-toxic and non-irritant in therapeutic dosage. It is rapidly eliminated through the urinary tract. It is bactericidal in aqueous solution against staphylococcus, streptococcus, gonococcus, *B. coli* and even *B. diphtheriae*. It is proposed for use in gonorrheal infections, urinary diseases, and in colon bacillus and mixed infections. The drug is supplied in the form of Aqueous Solution of Pyridium, 1 per cent; Pyridium Ointment, 10 per cent, and Pyridium Tablets, 0.1 Gm. Merck & Co., Inc., New York.

Pollen Antigens—National—Liquids obtained by extracting the dried pollen of plants with a 0.5 per cent sodium chloride solution containing sodium bi-

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carbonate and phenol. For a statement of actions and uses, see Allergic Protein Preparations, New and Non-official Remedies, 1930, p. 23. Pollen Antigens—National are marketed in packages of one 5 c.c. vial containing respectively 50, 100 and 250 units per c.c. The following products have been accepted: Ragweed Pollen Antigen—National and Timothy Pollen Antigen—National. National Drug Co., Philadelphia. (Jour. A. M. A., July 5, 1930, p. 35).

Mead's 5 D Cod Liver Oil with Viosterol.—A brand of cod liver oil with viosterol 5 D (N. N. R.) For a discussion of the actions and uses of cod liver oil with viosterol 5 D, see New and Non-official Remedies 1930, p. 257. Mead Johnson & Co., Evansville, Ind.

Siomine. — Hexamethylenetetramine tetraiodide. Siomine contains 78.5 per cent of iodine. Siomine is decomposed in the intestine with formation of hexamethylenetetramine and iodide, the rate of absorption and excretion being essentially the same as that of inorganic iodides. It therefore produces the effects of ordinary iodides from which it differs only in that it can be administered in solid form. No therapeutic claims are made for the hexamethylenetetramine component of siomine, this being present only to render the substance insoluble. The dosage is the same as that of potassium iodide. Siomine is supplied in the form of capsules containing respectively ½ grain, 1 grain, 2 grains, and 5 grains. Pitman-Moore Co., Indianapolis.

Ephedrine Nasal Jelly—Maltbie.—It is composed of ephedrine sulphate.—N. N. R. 1 per cent, menthol 0.25 per cent and sodium benzoate 0.5 per cent in a glycerite of tragacanth base. For a discussion of the actions and uses of ephedrine sulphate, see New and Non-official Remedies, 1930, p. 167. Maltbie Chemical Co., Newark, N. J.

Ephedrine Hydrochloride—P. D. & Co.—A brand of ephedrine hydrochloride—N. N. R. For a discussion of the actions and uses of ephedrine hydrochloride see New and Non-official Remedies 1930, p. 167. Ephedrine hydrochloride—P. D. & Co., is supplied in the form of capsules containing respectively ⅜ grain and ¾ grain. Parke, Davis & Co., Detroit.

Elixir of Pyramidon.—Each 4 c.c. (1 fluidrachm) contains pyramidon (New and Non-official Remedies, 1930, p. 314) 0.162 Gm. (2½ grains) in a menstruum containing alcohol, 20 per cent. H. A. Metz Laboratories, Inc., New York.

Pyramidon Tablets 1½ grains.—Each tablet contains pyramidon (New and Non-official Remedies 1930, p. 314), 1½ grains. H. A. Metz Laboratories, Inc., New York.

Thio-Bismol.—Sodium bismuth thioglycollate. A salt formed by the interaction of sodium thioglycollate and bismuth hydroxide containing approximately 38 per cent of bismuth. Thiobismol is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis (Bismuth Compounds, New and Non-official Remedies, 1930, p. 94); it is a water soluble compound, readily absorbable, and produces relatively little local injury. The product is supplied in the form of ampules containing 0.2 gm. of thio-bismol. Parke, Davis & Co., Detroit. (Jour. A. M. A., July 19, 1930, p. 200).

Accepted Devices for Physical Therapy

The following have been accepted by the Council on Physical Therapy of the American Medical Association for inclusion in its list of accepted devices for physical therapy:

The Davis Inhalator.—The Davis Inhalator (Bullard-Davis, Inc., New York), is a portable apparatus designed to assist physicians in the administration of oxygen or a mixture of oxygen and 5 per cent carbon dioxide in resuscitation in various forms of asphyxia. Compressed gases are contained in tanks and by a reducing valve may be delivered at the desired pressure through a breathing bag and mask as demanded by artificial or natural breathing of the patient. The apparatus meets the requirements for inhalators of approved standard and incorporates devices which make for flexibility, adaptability and safety. (Jour. A. M. A., July 19, 1930, p. 200).

Viosterol versus Cod Liver Oil.—Cod liver oil and viosterol solutions are by no means to be regarded as therapeutically equivalent. Cod liver oil cannot be replaced by the newer irradiated products except so far as the antirachitic factor vitamin D is concerned. Cod liver oil is also a carrier of the indispensable vitamin A. Furthermore, cod liver oil contains digestible and assimilable fats. (Jour. A. M. A., January 4, 1930, p. 53).

Book Announcements

Doctors and Specialists. A Medical Revue with a Prologue and a Good Many Scenes. By MORRIS FISHBEIN, M. D., Editor of the Journal of the American Medical Association and of Hygeia, the Health Magazine. With illustrations by DAN LAYMAN. The Bobbs-Merrill Company. Indianapolis. 1930. 12mo. of 118 pages. Cloth. Price, $1.00.

This Medical Revue is written by Dr. Fishbein in his inimitable style. It is full of chuckles for every doctor with a sense of humor—the ones to whom the author has dedicated this volume.

Beginning with the "Old-time Practitioner," the various stories take up first the "Modern Medico" and then the various specialists, including those in the hospitals, and some cultists. The book is cleverly illustrated.

We highly recommend it as a good "chaser of the blues" after a hard day's work. Any doctor or layman familiar with the frailties of the medical profession will get an evening of pleasure from the reading of this little book.

The 92 Elements. Their Names, Atomic Numbers, Symbols, Atomic Weights, Melting Points and Years of Discovery. Circular No. 92 B. 4-page pamphlet. Copyright 1930 by P. C. Kullman Company. New York. Copies may be had gratis upon request to publisher.

Early Pueblo Ruins in the Piedra District Southwestern Colorado. By FRANK H. H. ROBERTS, Jr. Smithsonian Institution. Bureau of American Ethnology. Bulletin 96. Illustrated. United States Government Printing Office. Washington, D. C. 1930. Octavo of 190 pages. Paper. For sale by the Superintendent of Documents, Washington, D. C. Price 75 cents.

United Fruit Company. Medical Department. Eighteenth Annual Report. 1929. Illustrated. Made in United States of America. Octavo of 451 pages. Paper.

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Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

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All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Monthly, 104½ West Grace Street, Richmond, Va.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

VOL. 57 SEPTEMBER No. 6

Editorial

Costs of Medical Care.

One of the most important questions now before the country is the economic and financial situation. Probably no time can be more propitious than the present for consideration of the economic interests of the practitioner of medicine. The committee investigating the costs of medical care has studied various parts of the general question; more from the standpoint of the patient. This is a proper approach and line of study because practitioners must feel a keen interest in every part of the costs of medical care of the sick. Particularly interesting, however, to practitioners of medicine should be the recent statement, issued by a special committee of private practitioners, from the general committee, elaborating the relation of the question of medical costs to the private practitioners of the country. Their statement aims to give information to practitioners as to the scope and aim of the inquiry. This committee of private practitioners presents their position in the following language:

"It was clearly recognized by all present at the Spring meeting that the committee has undertaken a program of studies which in its scope goes far beyond that part of the cost of medical care which physicians provide. The expense of several other kinds of service now looms large in the total cost of many illnesses. In addition, special emphasis was given at the meeting to the question of the adequacy of the various services available in a community. Finally, the committee adopted a statement of three fundamental principles proposed by the Chairman, which should go a long way toward reassuring those who have been apprehensive regarding the nature of the committee's ultimate recommendations.

I

"The committee is interested in far more than the physician's bill, which, in many instances, is considerably less than half the total cost of illness. Hospital care, nursing, dentistry, laboratory examinations, and medicines often involve considerable expense, as is clearly shown by several of the committee's studies which are now being completed or have already been reported upon. In one middle-western county recently surveyed, the expenditures for various kinds of medicines constituted over one-third of the total expense for medical care, and were 20 per cent greater than the costs of physicians' services. It is also becoming apparent that a great deal of money is being spent for useless medicines and for various irregular forms of treatment which do the patient no good or which may result in positive harm.

"In order to indicate clearly the broad scope of the committee's work, it was decided at the Spring meeting to make a slight change in its name. The word 'cost' is to be changed to 'costs.' The complete name of the committee, with sub-title, will henceforth be 'The Committee on the Costs of Medical Care—Organized to Study the Economic Aspects of the Prevention and the Care of Sickness, including the Adequacy, Availability and Compensation of the Persons and Agencies Concerned.'

"One vital problem before this committee, declared a prominent physician member, at the recent meeting, is the determination of what is reasonably adequate care. In many cases of obscure disorders and serious illness, expensive facilities are essential. Presumably, there must be available in the community well-trained general practitioners, certain specialists, dentists, nurses, hospitals and health agencies,—trained and well equipped to do their part in providing all the care that the individual may need. A plan of the executive committee, to conduct a study to determine standards of adequate medical care, under the general direction of some well-known competent physician and with the assistance of a committee of fifteen or twenty other physicians,

was heartily endorsed at the meeting of the general committee.

"The aim of the committee is to study the problem described by Dr. Olin West, the Secretary of the American Medical Association, as the one great outstanding problem before the medical profession today. This he says is that involved in 'the delivery of adequate, scientific medical care to all the people, rich and poor, at a cost which can be reasonably met by them in their respective stations in life.' The committee is endeavoring to establish a foundation of facts which have an important bearing upon this problem. On the basis of these facts, it will propose recommendations for the provision of adequate and efficient therapeutic and preventive service for all the people at a reasonable cost to the individual, which, at the same time, will provide physicians, dentists, nurses, hospitals and other agents assurance of adequate return. This is not a new statement of aim. Recent discussion, however, has given new emphasis to certain aspects of it. There are important items in the cost of sickness other than the physician's bill; and the adequacy of the service provided must be considered. The program of studies is a comprehensive one. It deals with questions of supply, demand, distribution and costs of all kinds of services, both preventive and curative: the relation of these costs to other expenses; the return accruing to the practitioners and various agents furnishing medical services; and especially will it seek to determine what standards of adequacy may reasonably be expected.

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"Dr. Ray Lyman Wilbur, Chairman of the committee, proposed at the meeting May 2nd a statement of three fundamental principles for the consideration of the committee. This statement was referred to each of four subcommittees which held sessions during the two day meeting. The entire committee, at its last session, May 3rd, adopted with a few verbal changes the three principles. These will be of special interest to the physicians and dentists. They follow:

"1. The Personal Relation Between Physician and Patient Must be Preserved in Any Effective System of Medical Service.

"Medical service is and doubtless, by its very nature, must remain a distinctly personal service. Even in this age of standardized commodities for the table, ready-to-wear clothing, and interchangeable spare parts for all types of machines, there has been no plan suggested for the reduction of medical diagnosis and treatment to basic units which can be ordered from traveling salesmen or acquired through correspondence courses. The physician must see his patient and see him, in many cases, over an extended period of time if the diagnosis and treatment are to achieve the greatest possible accuracy and efficiency. There is no substitute for personal observation.

"Man is not a standardized machine and each individual reacts to the conditions of life in a manner in some respects unique. In the treatment of disease, this individual variation is a factor of great significance and can receive due consideration only when the practitioner has known the patient for a considerable time and maintains a personal relation with the patient.

"2. The Concept of Medical Service of the Community Should Include a Systematic and Intensive Use of Preventive Measures in Private Practice and Effective Support of Preventive Measures in Public Health Work.

"The cost of adequate curative treatment is now high and may continue to increase as expensive procedures resulting from scientific progress become more widely used. Sickness, in addition, involves other personal and social costs, some of which cannot be measured in monetary terms.

"The outstanding achievements in scientific medicine have been made in the preventive rather than the curative field. Knowledge now available for the control of malaria, tuberculosis, smallpox, diphtheria, pellagra, typhoid fever, hookworm disease, and goiter, if effectively applied, would make unnecessary a considerabe proportion of the present expense for the cure of sickness.

"3. The Medical Service of a Community Should Include the Necessary Facilities for Adequate Diagnosis and Treatment.

"From the standpoint of effective diagnosis, many diseases, such as tuberculosis, cannot be recognized promptly in their early stages without the aid of elaborate technical equipment. From the standpoint of adequate therapy, if

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the best of modern technique is not immediately available, complete cures are either delayed or rendered impossible of attainment. To cite a specific illustration of the improvement of modern therapeutic procedures over those of ten years ago, the time required for treatment of fractures of the hip, and the percentage of permanent invalidity resulting from that injury have each been reduced by more than half.

"We cannot be content with anything except the best possible service that modern science can provide and it is therefore imperative that modern scientific equipment for the diagnosis and treatment of disease be available to the practitioners of medicine in every community."

Liver Extract in Secondary Anemia.

Every discussion of blood regeneration awakens interest. Whipple and associates,* in a recent article, draw attention to the effect of liver fraction in anemia due to hemorrhage. Favorable effect of liver feeding in pernicious anemia has been well established but there has been, as yet, no complete accord on the question as to whether or not there is a favorable influence produced in secondary anemia by the liver therapy. These workers have brought forward evidence to answer the question: Does liver therapy benefit human cases of secondary anemia? Considerable evidence has been presented for and against the question. The authors feel that the negative side has been supported by work in cases where there was an inadequate amount and duration of liver therapy. They feel that this conclusion was arrived at through the spectacular action of liver feeding in pernicious anemia, whereas favorable effects in cases of secondary anemia were less striking and possibly long delayed. They point out that pernicious anemia is a disease in which hemoglobin and related pigments are in great surplus; in which red cells are saturated with a maximum of hemoglobin; in which muscle hemoglobin is high in spite of anemia and inactivity and tends to lower muscle hemoglobin. Besides, the blood serum and body fluids contain an excess of pigments, as does the urine and feces, which partake of blood hemoglobin elements. One remembers Whipple's explanation of several years ago, relating to this question, in which it was suggested that these findings in pernicious anemia result from faulty construction or lack of red cell stroma and not from red cell destruction. These workers feel that this explanation fits in with recent observations of spectacular regeneration of red cells in pernicious anemia after liver feeding. It is, in the light of this observation, assumed that the liver feeding supplies the missing element necessary for maturation of red cell stroma.

In secondary anemia, on the contrary, there is a deficit of hemoglobin pigment and related pigments. In other words, there is a lack of hemoglobin and, consequently, a relative excess of stroma; besides body pigments are subnormal in concentration; and pigment derivatives are wanting in excess amount unless cell destruction is in progress. This appears to denote an exhaustion of normal blood forming systems brought on by a lack of stimulus from a low state of blood hemoglobin. To interpret this condition is to say that the reserves of parent hemoglobin material, upon which new hemoglobin depends for fabrication, are exhausted or reduced. The part played by infection and intoxication in this process has been observed by these workers as they have observed the effects of these states in the new hemoglobin production in the normal hyperplastic bone marrow in dogs. They state that it has been proven beyond reasonable doubt that liver and kidney in the diet furnish the maximum supply of substances most suitable for new red cell and hemoglobin fabrication. Also, they observe in connection with the need of iron in secondary anemia, that the optimum intake of iron from salts and food has been established for the dog in experimental anemia as about 60 mg. iron, as metal, daily.

*Whipple and Associates, J. A. M. Sc., May, 1930, page 628.

The Norfolk Meeting, October 21, 22, 23.

The president of the Medical Society of Virginia, Dr. Charles R. Grandy, is doing all possible to make the coming Norfolk meeting a success. Throughout the year he has been making a general pressure movement upon all with a view to making the time spent at the Norfolk meeting worth while. It is his hope that the membership may turn out in large numbers; that the papers presented will be of a high quality; that the discussion of the subjects of scientific interest may help to enlarge and quicken the knowledge of the participants

and audience; that the clinics, exhibiting and elaborating a number of interesting medical and surgical patients, may serve to inform and interest those in attendance; that from the addresses of such distinguished speakers as Dr. William S. Thayer, of Baltimore, and Dr. David Lyman, of New Haven, Conn., our invited guests, the members of the Society will receive inspiration; and that from the interchange of views, renewal of friendships and social contacts of the members, the Society will be welded together and made stronger for the great purposes of its organization and aims.

In these times of economic distress and depression, it is hoped that the physicians of the State will gather at the annual convention in large numbers, determined to enter in conference with a strong purpose and resolve to do what they can to stand and give a helping hand where it may be needed and to make a greater effort to improve and enlighten one another to the better discharge of the duties of the profession. Due to the state-wide business depression and serious financial losses, suffered from the agricultural and crop failures consequent upon the unprecedented and prolonged drought, physicians of the State will be called upon, as probably no other professional class, to bear a part. This situation, it is hoped, will not deter members from attending the Norfolk meeting, for those in attendance may derive a sort of renewed strength from the scientific discussions, personal social contacts and from the addresses to be heard there.

It is very important that each component society send its full quota of delegates.

Medicine in Virginia in the Seventeenth Century.

The favorable reception accorded this book by those who have reviewed it bespeaks for it the success it deserves. Physicians and laymen may equally find in its pages an abounding interest. It is hoped that the author and publishers may but receive the approbation and approval that a widespread sale of the work will give. Every doctor in Virginia should have this book in his home and library.

News Notes

Prepare to March on Norfolk!

Dr. W. L. Harris, general chairman of the Local Committee, in charge of our approaching meeting in Norfolk, October 21st-23rd, reports that we will have good scientific and commercial exhibits. The program also promises a number of papers on interesting subjects. The full Program will be published in our October issue. In the meantime, hotel reservations should be made so as to save last minute worries. The following rates are given by the various hotels:

Hotel Rates

MONTICELLO HOTEL:
Single room without bath, $2.50 to $3.50 per day; with bath, $3.50 to $6.00 per day.
Double room, without bath, $4.50 to $6.00 per day (two persons); with bath, $6.00 to $8.00 per day.

SOUTHLAND:
Single room with bath, $3.00, $3.50 and $4.00.
Without bath, single rooms $2.00, $2.25 and $2.50.

ATLANTIC HOTEL:
Room with bath, $3.00 for one in room; $2.25 two in room.
Room without bath, $2.00 single; $1.75 two in room with two beds.

FAIRFAX:
Single person, room with bath, $2.00 to $4.00.
Two in room, $3.50 to $6.00, with bath.

LORRAINE:
Room with bath, single person, $3.00; two in room with bath, $5.00.
Without bath, single person, $2.00; two in room, $2.50 each.

The social side of the program includes a golf tournament to be played on Tuesday, October 21st, beginning at 10 A. M.; entertainments for the visiting ladies by the Woman's Auxiliary of the local society; a buffet supper at the Norfolk Country Club on Wednesday evening, at 10 P. M., for the doctors and ladies accompanying them; and an oyster roast given by Dr. Grandy at Cape Henry, for members only, on Thursday afternoon, following the close of the meeting.

Make your plans to attend and bring the ladies of your family with you.

Alumni Meeting and Dinner.

Among the dinner meetings scheduled at time of the State Society meeting in Norfolk, in October, is a get-together meeting of the Alumni of the Medical College of Virginia. Information about this may be obtained from the secretary of the Alumni Association, Dr. C. L. Outland, at Alumni headquarters, Medical College of Virginia, Richmond.

XUM

Heads Ethics and Judiciary Committee.

Dr. James K. Hall, Richmond, Va., has been appointed by Dr. Grandy as a member for two years and chairman of the Committee on Ethics and Judiciary of the State Society, to fill the vacancy caused by the death of Dr. Garnett Nelson, of Richmond.

Married.

Dr. Lewis Winston Angle, of the class of '26, Medical College of Virginia, and Miss Margaret Anne Carothers, at Rockville, Md., October 8, 1929. They are now at home at 729 Nebraska Avenue, Kansas City, Mo. Dr. Angle was for a time a member of the house staff of Johnston-Willis Hospital, Richmond, Va.

Dr. Charles Lee Quaintance, Queens Village, N. Y., and Miss Elizabeth Mary Coffey, New York, N. Y., the middle of August. Dr. Quaintance is an alumnus of the University of Virginia, Department of Medicine, class of '21.

The Southwestern Virginia Medical Society

Is to hold its semi-annual meeting in Christiansburg, Va., September 23rd and 24th, under the presidency of Dr. J. Coleman Motley, of Abingdon. Dr. E. G. Gill, Roanoke, is secretary. Dr. William F. Drewry, Director of the Bureau of Mental Hygiene, State Department of Public Welfare, Richmond, Va., is the invited guest, and will speak on "Mental Hygiene." Members listed for papers and discussions on the preliminary program are: Drs. D. B. Stuart, Dublin; R. F. Thornhill, Pulaski; R. H. Woolling, Pulaski; J. K. Caldwell, Galax; S. H. Nixon, Christiansburg; R. M. DeHart, Floyd; G. A. Wright, Marion; W. C. Caudill, Pearisburg; H. B. Stone, Roanoke; and J. J. Giesen, Radford.

The Southside Virginia Medical Association

Will hold its regular quarterly meeting at Courtland, Va., September 9th. Dr. J. A. Grizzard, Drewryville, is president, and Dr. R. L. Raiford, Franklin, secretary.

State Care of Crippled Children in Virginia.

A new program of State care for crippled children in Virginia is to be carried through jointly by the State departments of public health and public welfare. Each department has received from the 1930 Legislature a grant of $25,000 for the work. Whenever possible, children are to be treated in their homes through the cooperation of local physicians; the more serious cases will be sent to hospitals as far as the appropriation will permit.

Medical Service in Federal Prisons.

On May 13, 1930, the President approved an Act of Congress which authorized the United States Public Health Service to provide medical service in Federal penal and correctional institutions under the Department of Justice. Henceforth the medical and psychiatric work in Federal prisons will be supervised and furnished by personnel of that Service. This new legislation is considered important in the field of penology and mental hygiene, and is part of the program for improving the conditions in Federal prisons, and also an effort to promote uniformity in the medical work of the Federal Government.

Dr. C. W. Trexler,

Of the University of Virginia, Department of Medicine, '26, is now employed as the Medical Superintendent of the Mahelona Memorial Hospital, Kealia, Hawaii. At the recent meeting of the Territorial Medical Association in Honolulu, Dr. Trexler represented the Kauai Medical Society. He and Dr. Forrest J. Pinkerton, the outgoing President, were the two Councillors elected by the Territorial Medical Association to serve for the next three years.

Dr. F. H. Crawford,

Of Mt. Sidney, Va., who recently returned from abroad, where he spent some time specializing in the eye, ear, nose, throat, and bronchoscopy, at the University of Vienna, Austria, has opened a suite of offices at 9 North Central Avenue, Staunton, Va.

P. A. Surgeon R. A. Vonderlehr,

Of the U. S. Public Health Service, formerly of Richmond, Va., on July 24th, was directed to proceed from Hamburg, Germany, to Bonn and Frankfort, Germany, then to London, England, and such places in Great Britain, and Ireland as may be necessary, for the purpose of discussing with the directors of research laboratories the latest methods in venereal disease control measures; then proceed to Paris, France, and report to the Medical Officer in Supervisory Charge of Public Health activities in Europe for duty.

Programs Prepared by the United States Commission for the Two Hundredth Anniversary of the Birth of George Washington.

Plans of the United States George Washington Bicentennial Commission for the Celebration of the Two Hundredth Anniversary of

the Birth of George Washington in 1932 provide for the active participation of women's organizations throughout the country. Complete programs depicting the life, character and achievements of George Washington have been prepared for use during 1931 and 1932. They appear in pamphlet form with a list of authorities for reference for each program.

All communications relative to these programs should be addressed to the George Washington Bicentennial Commission, Washington Building, Washington, D. C.

The American Proctologic Society,

At its annual meeting recently held in Buffalo, N. Y., elected Dr. Dudley Smith, of San Francisco, president; Dr. Samuel E. Newman, of St. Louis, vice-president; Dr. Emmett H. Terrell, of Richmond, Va., councillor; and Dr. Curtice Rosser, of Dallas, Texas, secretary-treasurer (re-elected). It was voted to hold the next annual meeting in Philadelphia, just prior to the 1931 A. M. A. annual session.

Dr. Howard L. Mitchell,

Lexington, Va., returned the first of August from a vacation of six weeks in Europe. Among other places visited, he attended the Passion Play in Oberammergau.

Graduate Fortnight.

Attention is again called to the Third Annual Graduate Fortnight of the New York Academy of Medicine, to be held in New York City, October 20 to 31, 1930. Information and clinical assignments may be obtained from the Academy at 2 East 103rd Street, New York. The profession generally is invited to attend. No fees will be charged for registration or for attendance at any of the clinics or meetings on the program.

Dr. Henry W. Decker,

Richmond, Va., has been appointed to succeed the late Dr. S. B. Moon on the Medical staff of the Virginia Home for Incurables, of this city.

The Inter-State Post-Graduate Medical Association of North America

Will hold its International Assembly in the Municipal Auditorium at Minneapolis, Minn., October 20th-24th, inclusive. Dr. William D. Haggard, of Nashville, Tenn., is President of the Association. The program includes a large number of prominent medical men.

Information may be had from the secretary, Dr. Edwin Henes, Jr., 445 Milwaukee St., Milwaukee, Wis.

Hospital Gets New Charter.

The Loudoun Hospital, Leesburg, has obtained a new charter in which the name has been changed to the Loudoun County Hospital, Incorporated. Among some of the changes made in the new arrangement is that the active members of the corporation shall consist of three persons, the Judge of the Circuit Court of Loudoun County, the chairman of the Board of Supervisors, and the chairman of the School Board of Loudoun County, and their successors in office.

The officers and directors for the first year are: T. U. Dudley, president; Dr. H. P. Gibson and Dr. G. F. Simpson, vice-presidents; H. C. Littlejohn, treasurer, and W. A. Metzger, secretary.

The following doctors are members of the Board of Directors: Drs. J. A. Gibson, G. F. Simpson, and H. P. Gibson.

$19,250 Paid as Compensation to 39 Injured Children.

Thirty-nine children injured while illegally employed were given last year a total compensation of $19,250, reports the Industrial Commission of Wisconsin. This sum included the increased compensation granted by State law to children who are employed in violation of the State's child labor law.

Dr. Joseph T. McKinney,

Roanoke, Va., announces removal of his X-ray laboratory and offices to Suite 603 Medical Arts Building, that city, where he has installed complete new modern X-ray equipment for X-ray diagnosis and therapy.

The Virginia Hospital Association

Held its annual meeting at Virginia Beach, Va., July 8th, under the presidency of Dr. J. E. Harris, of Winchester. There was a good program and an attendance of some thirty-six members, representing eighteen hospitals. Dr. Knowlton T. Redfield, of Jefferson Hospital, Roanoke, was elected president for the coming year, and Mr. John Beavers, superintendent of Riverside Hospital, Newport News, secretary-treasurer. The next meeting will be held in Richmond, the second Tuesday in July, 1931.

Dr. D. Hunter Marrow,

Who spends the winter and spring seasons at Daytona Beach, Fla., is now at his Virginia home in Boydton, Va.

XUM

Civil Service Positions.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examinations for the following positions:

Biologist, applications to be on file at above address not later than September 17th;

Senior medical office (pathology) and associate medical officer (pathology), applications to be on file not later than September 24th;

Chief nurse and head nurse (Indian Service), graduate nurse, graduate nurse, visiting duty, and graduate nurse, junior grade (various services), applications to be on file, as above, not later than December 30th.

Dr. J. Hugh Bailey,

Formerly of Danville, Va., who has been in Montana for several years, announces that his address is now Kalispell, that state.

Dr. R. H. Rowe

And family, of Exeter, Va., spent their summer vacation of several weeks at their former home, Hickory, N. C.

Dr. Theodore M. Trousdale,

Who practiced for a time at Richlands, Va., has recently completed special work as assistant resident and later resident surgeon of the eye, ear, nose and throat service at the Long Island College Hospital in Brooklyn, N. Y. Following this he spent some time at the postgraduate schools of the New York Eye and Ear Infirmary and the New York Post-Graduate Medical School and Hospital, before locating at 545 South Street, Peekskill, N. Y., for the practice of this special work.

Demonstrations on Treatment of Lesions of the Bone.

On September 15th, 16th and 17th, there will be lantern-slide demonstrations, with four lanterns and screens, on the Diagnosis and Treatment of Diseases and Tumors of Bone, in the ballroom of Belvedere Hotel, Baltimore, Md. The number attending these demonstrations is limited to 800, so that radiologists, surgeons, pathologists, internists and others interested should communicate at once with Miss Maude Walker, Secretary to Dr. J. C. Bloodgood, Johns Hopkins Hospital, Baltimore, for details.

Surgeon L. L. Williams, Jr.,

Of the U. S. Public Health Service, has been relieved from duty at Richmond, Va., and assigned to duty at Washington, D. C., effective September 1st.

Dr. Henry Clay Smith,

Formerly of Crewe, Va., but for several years located at Williamson, W. Va., has just located at Boyce, Va.

Dr. Rienhoff Receives Award.

At the recent meeting of the American Association for the Study of Goiter at Seattle, Washington, Dr. William F. Rienhoff, Jr., of Johns Hopkins University, Baltimore, Md., received the annual award of $300 for the best essay dealing with the goiter problem. Doctors O. P. Kimball, of Cleveland, Ohio, and E. P. and D. R. McCullagh, Cleveland Clinical Foundation, Cleveland, Ohio, and Robert P. Ball, of the University of Louisville, received honorable mention.

Ensworth-Central-Northwestern Medical College Alumni.

The annual meeting and banquet of the Ensworth-Central-Northwestern Alumni Association will be held in St. Joseph, Mo., the home of the alma mater, during the week of the Kansas City Fall Clinical Conference, from October 6 to 10, 1930. All alumni of these three Missouri colleges are urged to attend.

For information, address the secretary, Dr. Charles Wood Fassett, Box 38, Glendale, Calif.

Mental Disorders and the Public Health.

In a recent address, Surgeon-General H. S. Cumming, of the U. S. Public Health Service, pointed out that the public health administrator of the present day is called upon from time to time to make new adjustments and new adaptations to meet the ever changing conditions of modern life.

He emphasized the necessity for directing efforts toward the prevention of mental disorders, toward the conservation of mental health, and toward the amelioration of adverse mental states which is apparent by the ever-increasing number of persons with mental disorders seeking aid in public institutions. During the fifty-year period from 1880 to 1930, the rate of persons under care in State hospitals for the insane alone had increased from 81 to more than 220 per each 100,000 of the general population. The rate had almost

trebled, but the actual number of cases under care had increased to almost six times the number under care in 1880. The rapid expansion in public facilities for the care of the group comprising one form of mental illness—namely, the group for whom the public demands segregation—has entailed an enormous outlay of public funds for buildings and equipment, and required yearly increases in expenditures for the care of inmates. This economic loss is of vital interest to legislators and practical administrators who are equally desirous of reaching an adequate solution of the problem. An intangible, but none the less important, aspect of such a situation is the economic loss to the community through invaliding so many people in the prime of life, and the suffering of individuals whose families are not infrequently rendered impoverished by such diseases.

The problem of the so-called insanities is only one of the several problems, for other mental disorders also claim attention. These include the mentally defective or feeble-minded of which it is estimated there are about 500,000 in the United States today.

The Annual Report of Gill Memorial Eye, Ear and Throat Hospital,

Roanoke, Va., for the year ending June 30, 1930, shows that there were 747 patients admitted to the hospital during the year and 10,454 patients treated in the Out-Patient Department. The operations were divided as follows:

Forty eye operations; nineteen mastoid operations; 194 endoscopic operations; 494 throat operations; and there were nineteen cases of foreign bodies (in the air and food passages), 182 specimens of blood were taken for Wassermann and fourteen of these were four plus positive. All Departments of the hospital had an increase in volume of work over the previous year.

The annual Post-Graduate Course was given from April 7 to 12, 1930, and was attended by physicians from twelve states.

The medical staff is composed of Drs. E. G. Gill, Booker Lee, and B. N. Pittinger.

An Examining Room on Wheels.

A railroad car equipped with X-ray and other apparatus to be used for physical examination of employees engaged in train operation and applicants for this service has just been built by The Milwaukee Road and has been placed in service immediately under the supervision of the railroad's Surgical Department. It will be used over the entire system to supplement the work now performed by the road's physicians and surgeons.

Dr. A. R. Metz, Chief Surgeon for the Road, conceived the idea of the car as a means of promoting greater efficiency among employees whose physical condition is an all-essential factor in the safe operation of trains.

The exterior of the car resembles a modern steel sleeping car. The interior is divided into a series of compartments provided with the most modern equipment available necessary for complete physical examination. A first aid room is also included. The examination car will give the employees now in service an opportunity to learn of any early physical defects which can be corrected, thus keeping them in the best of health possible and at the same time prolonging their period of usefulness.

For Sale—

Fine suburban location in thickly settled community for up-to-date active physician. Ten miles from Richmond, twelve miles from Petersburg and Hopewell. Best country roads in state, on R. R. and electric car line. Attractive home with all modern conveniences, six acres of land, place expensively fenced, with running water on place from never failing spring. Located in the village of Centralia, three miles from Chester with around 1,000 people, only one other active physician between Richmond and Petersburg, and between James river and Amelia line. Ninety per cent of work among salaried and industrial workers, ten per cent farming class. Nothing to sell but my property worth $12,500.00 which I will sell for $9,500.00. Reason for selling returning to city for office work exclusively.

Don't write, come and see Dr. T. C. Harris, Centralia, Va. (*Adv.*)

For Sale Cheap—

One Aloe Ultra-Violet Ray Lamp used only few months, also miscellaneous instruments and books belonging to the late Dr. Nevitte. Inquire of Mrs. R. R. Nevitte, Temperanceville, Va. (*Adv.*)

Technician Desires Position.

Technician with two years' college training and practical experience in clinical laboratory work desires position in hospital. Address "No. 245," care this journal. (*Adv.*)

Obituary Record

Dr. Charles P. Rexrode.

Announcement has just reached us of the death of Dr. Rexrode, at his home, Mt. Solon, Va., July 2, 1929. He was born at Crabbottom, Va., in 1871 and graduated from the Baltimore Medical College in 1896. Dr. Rexrode had been a member of the Medical Society of Virginia for the past twenty years.

Dr. Francis Beattie Hutton, Jr.,

Captain, U. S. Army, M. C., retired, died at his home in Abingdon, Va., June 29th. He was thirty-nine years of age and a graduate of the Medical College of Virginia, class of '14. Dr. Hutton served during the World War.

Dr. John T. Sharp,

Charleston, W. Va., died of heart disease, June 29th. He was fifty-eight years of age and graduated from the former University College of Medicine, Richmond, Va., in 1901.

Dr. H. F. Whisler,

Grottoes, Va., died June 14th. He was sixty-three years of age.

Resolutions on Death of Dr. John W. Dillard, Who Died in Lynchburg, Va., on May 17th:

We, as individuals and members of the Lynchburg and Campbell County Medical Society, feel keenly our loss in the passing of Dr. John W. Dillard. Dr. Dillard labored long and diligently in Lynchburg and Virginia, and served faithfully, as physician and surgeon, the people of the city and the state, greatly endearing himself to his patients.

In his going a great loss has been sustained by the Medical Society, the hospitals and the people of Lynchburg as a whole.

We wish to express our appreciation of the work and the personality of Dr. Dillard and to extend our sympathy to his widow and the members of his family in their bereavement.

It is our desire that these resolutions be spread upon the minutes of the Society, and that copies be sent to the VIRGINIA MEDICAL MONTHLY and the family.

July, 1930

CHAS. P. M. SHEFFEY,
DON PRESTON PETERS,
A. W. TERRELL,
Committee.

Resolutions on Death of Dr. Robert P. Kelly, Who Died in Lynchburg, Va., on June 10th:

At a recent meeting of the Lynchburg and Campbell County Medical Society, the following resolutions were passed:

We, the members of the Lynchburg and Campbell County Medical Society, fully realizing the great loss we have sustained at the death of Dr. Robert Patton Kelly, wish to take this means of publicly expressing our regrets at his untimely passing.

For many years Dr. Kelly occupied a high and honorable place in the medical profession. Always striving to keep and maintain the principles of the medical profession on the loftiest plane, and always with the welfare of his community at heart. We, as members of the Lynchburg and Campbell County Medical Society, having worked with Dr. Kelly, fully appreciate his great worth and will ever be mindful of our loss. Therefore, be it

RESOLVED, That in the death of Dr. Robert Patton Kelly, the Medical profession at large has lost an able physician and the community a loyal citizen.

We wish to take this method of expressing our sympathy to his family and loved ones. Therefore, be it

RESOLVED, That copies of this resolution be sent to the family of Dr. Robert Patton Kelly, and that it be published in the VIRGINIA MEDICAL MONTHLY.

July, 1930.

D. P. SCOTT,
J. W. DEVINE,
F. O. PLUNKETT,
Committee.

Resolutions on Death of Mrs. Lightfoot.

The Medical and Surgical Staff of the Retreat for the Sick, Richmond, Va., adopted the following resolutions on the recent death of Mrs. John B. Lightfoot, President of the Lady Board of Managers of the Hospital:

In the death of Mrs. John B. Lightfoot, the Retreat for the Sick Hospital and the community at large has lost a valuable friend and an ardent worker in the true spirit of humanity. During her associations with the Retreat Hospital, covering a period of forty years, she gave of herself, always with untiring efforts, and served as President of the Lady Board of Managers for the past seven years. She enjoyed the esteem and confidence of a large circle of friends and hospital associates, supporting its needs at all times in a skillful and unselfish manner. The Medical and Surgical Staff of the Retreat for the Sick feels that in the loss of the wise counsel, genial personality, fair-mindedness and abiding loyalty of Mrs. Lightfoot, it is deprived of one of its most valuable assets; and so,

WHEREAS, It has pleased an all-wise Providence to take from our midst our distinguished friend and co-worker; therefore,

BE IT RESOLVED by the Staff of the Retreat for the Sick Hospital,

That we tender to the bereaved family our heartfelt sympathy in this hour of distress; and be it further resolved,

That a copy of these resolutions be transmitted to them, that they be spread upon the minutes and recorded at the hospital, and that they be printed in the VIRGINIA MEDICAL MONTHLY as a mark of esteem and affection.

JOSEPH BEAR, *Chairman*,
J. W. HENSON,
R. E. MITCHELL,